Vol. 931 Number 4

OFFICIAL GAZETTE

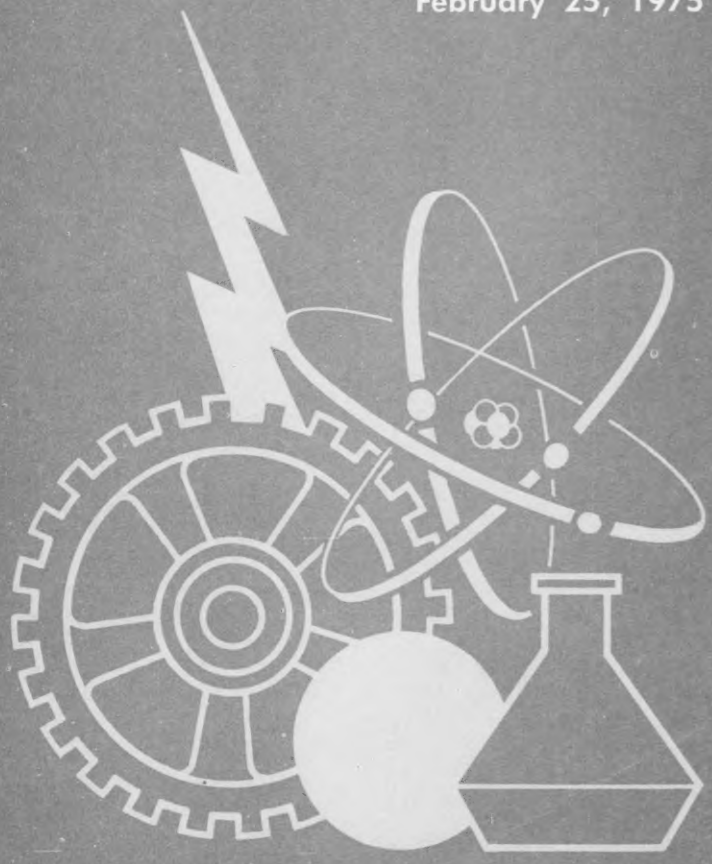
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

AM[illegible] CO.
MAR 4 1975
RESEARCH LIBRARY

PATENTS

February 25, 1975



U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

February 25, 1975 Volume 931 Number 4

AMOCO OIL CO.

MAR 4 1975

RESEARCH LIBRARY

CONTENTS

	Page
Patent and Trademark Notices	
Patent Suits	1450
Patent Notices	
Certificates of Correction for the Week of February 25, 1975	1451
Board of Appeals	1451
Condition of Patent Applications	1452
Reissue Patents Granted (28,343)	1453
Patents Granted	
General and Mechanical (3,867,726)	1457
Chemical (3,868,214)	1617
Electrical (3,868,473)	1684
Design Patents Granted (234,379)	1770
Index of Patentees	PI 1
Indices of Reissues and Designs	PI 30
Classification of	
Patents (Including Reissues)	PI 31
Designs	PI 33
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 34
Designs	PI 35

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $211.00 per annum, foreign mailing $52.75 additional; single copies $4.10 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $60.25 per annum, foreign mailing $15.10 additional; single copies $1.25 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,975,330, Bell and Bloom, ELECTRODELESS DISCHARGE METHOD AND APPARATUS; **3,071,721,** H. G. Dehmelt, OPTICAL ABSORPTION MONITORING OF ORIENTED OR ALIGNED QUANTUM SYSTEMS; **3,150,313,** same, MODULATION OF A LIGHT BEAM BY ABSORBING QUANTUM SYSTEMS EXHIBITING A PERIODICALLY VARYING ALIGNMENT; **3,187,251,** W. E. Bell, QUANTUM OSCILLATORS; **3,246,254,** Bell and Bloom, ATOMIC STABILIZED FREQUENCY SOURCE; **3,256,500,** J. T. Arnold, OPTICAL MAGNETOMETERS; **3,267,360,** H. G. Dehmelt, OPTICAL ABSORPTION MONITORING OF ALIGNED ALKALI ATOMS; **3,363,193,** same, ADJUSTABLE FREQUENCY ATOMIC FREQUENCY STANDARD; **3,382,452,** Rempel, Swartz, Packard and Rorden, FREQUENCY STABILIZATION APPARATUS; **3,408,591,** A. L. Helgesson, TIME SCALE CHANGER FOR ATOMIC STABILIZED FREQUENCY SOURCES; **3,575,655,** H. G. Dehmelt, APPARATUS FOR OPTICALLY MONITORING THE GYROMAGNETIC RESONANCE OF QUANTUM SYSTEMS; **3,584,292,** same; **Re. 23,950,** Bloch and Hansen, METHOD AND MEANS FOR CHEMICAL ANALYSIS BY NUCLEAR INDUCTIONS, **filed** July 9, 1974, Court of Claims (District of Columbia), Doc. 250–74, *Varian Associates* v. *The United States.*

3,045,922, A. E. Jensen, SELF-ERECTING SPRINKLER HEAD FOR IRRIGATION PIPELINES, **filed** Aug. 5, 1974, D.C. Oreg. (Portland), Doc. C–74–616, *Arthur E. Jensen* v. *Western Irrigation and Manufacturing, Inc. et al.*

3,071,721. (See 2,975,330.)

3,150,313. (See 2,975,330.)

3,168,130, E. W. Turpin, WHEEL SUPPORTING AND TIRE DISMOUNTING APPARATUS; **3,267,977,** same, SUPPORT DEVICE FOR VEHICLE WHEELS, **filed** Feb. 3, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–121, *Big Four Automotive Equipment Corp.* v. *George Michael Jordan, doing business as Tire Service Equipment Representatives and Tire Handling Equipment Representatives.* Judgment—Claim 2 of 3,168,130 is valid and infringed by defendant; Claims 3 and 7 of 3,267,977 are infringed by defendant and are invalid. Defendant is enjoined, Aug. 16, 1974.

3,187,251. (See 2,975,330.)

3,246,254. (See 2,975,330.)

3,256,500. (See 2,975,330.)

3,267,360. (See 2,975,330.)

3,267,977. (See 3,168,130.)

3,319,384, E. T. Berg, CONSTRUCTION FOR EXTRUDED REGLETS, **filed** Sept. 10, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3–74–881–B, *Edward T. Berg and Superior Concrete Accessories, Inc.* v. *Memco, Inc.*

3,358,658, M. V. Dadd, LUBRICANT FLOW METERING MEANS FOR ENGINE ROCKER ARM LUBRICATION SYSTEM; **Re. 25,154,** P. F. Bergmann, MEANS FOR METERING LUBRICATING OIL FROM AN HYDRAULIC TAPPET TO A HOLLOW PUSH ROD; **Re. 25,974,** M. V. Dadd, ROCKER ARM OIL CONTROL MEANS, **filed** Mar. 9, 1973, D.C.N.J. (Newark), Doc. C–330–73, *Johnson Products Inc.* v. *Welles Manufacturing Corp.* Consent judgment for permanent injunction as to Wells Mfg. Corp. on June 17, 1974.

3,363,193. (See 2,975,330.)

3,382,452. (See 2,975,330.)

3,408,591. (See 2,975,330.)

3,486,495, H. W. Allen, ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENTS, **filed** Sept. 10, 1974, D.C., E.D. Wash. (Spokane), Doc. C–74–210, *Allen Archery, Inc.* v. *Martin Archery, Inc. et al.*

3,515,779, R. L. Jones, MOLD AND METHOD FOR CASTING CONCRETE PANELS; **3,702,180,** same, MOLD FOR CASTING CONCRETE PANELS, **filed** Aug. 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–2469–JWC, *Robert L. Jones, Labr Ado, Inc.* v. *Vefo, Inc., Superior Concrete Accessories et al.*

3,524,680, L. T. White, MINING MACHINE HAVING SPIRAL CUTTERS WITH SCAVENGER BOARD; **3,640,580,** same, DUST ELIMINATING COAL-MINING APPARATUS, **filed** Aug. 16, 1974, D.C., E.D. Ky. (Lexington), Doc. 74–228, *Letcher T. White* v. *Jeffrey Mining Machinery Co., Jeffrey Galion, Inc. and Dresser Industries, Inc.*

3,575,655. (See 2,975,330.)

3,584,292. (See 2,975,330.)

3,594,255, W. D. Budinger, HICKEY ROLLER AND METHOD; **3,635,158,** same, ROLLER FOR PRINTING PRESS, **filed** June 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1372, *Rodel, Inc. and William D. Budinger* v. *American Roller Co.* Dismissed on plaintiff's motion 41 A(1)(i), Oct. 25, 1974.

3,635,158. (See 3,594,255.)

3,640,580. (See 3,524,680.)

3,658,589, R. E. Shaddock, CATCH BASIN AND SEWER PIPE CLEANER, **filed** May 2, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1143, *Myers-Sherman Company* v. *Bruce Municipal Equipment Inc.* Enter final consent decree, Dec. 17, 1973.

3,687,128, G. H. Williams, INSTANT WATER HEATER, **filed** Sept. 20, 1974, D.C. Utah (Salt Lake City), Doc. C–74–302, *Garold H. Williams* v. *Litton Systems, Inc. et al.*

3,702,180. (See 3,515,779.

3,722,399(a), J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS; **Re. 27,920,** same, **filed** Mar. 21, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c793, *Scovill Manufacturing Co.* v. *McGraw-Edison Company.* **Same, filed** Mar. 21, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c794, *Scovill Manufacturing Co. etc.* v. *K Mart Enterprises of Illinois, Inc.*

3,722,399(b), J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, **filed** Mar. 21, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c795, *Scovill Manufacturing Co.* v. *Wieboldt Stores, Inc.* Pursuant to stipulation between parties, cause is hereby dismissed, June 6, 1974. **Same, filed** June 6, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1539, *Scovill Manufacturing Company* v. *The Mostow Company.*

3,732,633, Margolis and Saunders, SLIDING PANEL DISPLAY, **filed** Sept. 17, 1974, D.C.N.J. (Trenton), Doc. 74–1453, *Ply-Gem Industries, Inc.* v. *Hunterdon Home Center Inc. and Robert Fischer.*

Re. 23,950. (See 2,975,330.)

Re. 25,154. (See 3,358,658.)

Re. 25,974. (See 3,358,658.)

Re. 27,920, J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, **filed** Apr. 25, 1974, D.C., S.D.N.Y., Doc. 74–C–1819, *Van Wyck International Corp.* v. *Scovill Manufacturing Co.*

Re. 27,920. (See 3,722,399(a).)

Certificates of Correction for the Week of Feb. 25, 1975

Re. 28,160	3,811,974	3,839,946	3,851,638
Re. 28,181	3,813,314	3,840,313	3,852,020
Re. 28,271	3,813,792	3,840,485	3,852,080
D. 233,776	3,814,716	3,840,656	3,852,396
D. 233,777	3,814,937	3,840,741	3,852,404
3,544,257	3,816,177	3,840,816	3,852,974
3,545,493	3,816,951	3,841,035	3,853,219
3,572,248	3,818,689	3,841,113	3,853,226
3,616,296	3,818,779	3,841,389	3,853,495
3,683,061	3,819,707	3,841,714	3,853,564
3,695,364	3,819,804	3,841,871	3,853,685
3,704,300	3,821,217	3,842,145	3,853,721
3,708,453	3,823,008	3,842,230	3,854,061
3,713,802	3,823,150	3,843,426	3,854,161
3,714,126	3,824,197	3,843,512	3,854,810
3,722,727	3,824,247	3,843,552	3,854,817
3,729,179	3,824,483	3,843,559	3,855,107
3,738,101	3,824,741	3,843,899	3,855,162
3,740,404	3,825,168	3,844,352	3,855,543
3,742,157	3,825,424	3,845,684	3,855,685
3,743,275	3,827,603	3,846,245	3,856,226
3,743,816	3,827,940	3,846,428	3,856,254
3,745,780	3,828,885	3,846,553	3,856,414
3,751,417	3,829,202	3,846,612	3,856,495
3,757,006	3,829,959	3,846,719	3,856,547
3,761,182	3,832,324	3,846,783	3,856,628
3,761,394	3,832,337	3,846,860	3,856,832
3,762,220	3,832,428	3,846,868	3,856,935
3,763,169	3,832,789	3,847,066	3,857,322
3,766,727	3,832,994	3,847,094	3,857,369
3,770,572	3,833,472	3,847,619	3,857,393
3,771,041	3,833,567	3,848,015	3,857,395
3,771,605	3,833,763	3,848,631	3,857,476
3,772,222	3,834,512	3,848,638	3,857,594
3,772,545	3,834,866	3,848,721	3,857,601
3,773,128	3,835,023	3,849,224	3,857,677
3,775,298	3,835,075	3,849,227	3,857,692
3,776,838	3,835,416	3,849,291	3,857,746
3,778,597	3,835,666	3,849,490	3,857,791
3,783,032	3,836,356	3,849,566	3,857,803
3,784,463	3,836,415	3,849,776	3,857,840
3,785,964	3,837,020	3,849,909	3,857,960
3,787,426	3,838,102	3,850,171	3,857,977
3,787,457	3,838,134	3,850,222	3,858,039
3,790,585	3,838,296	3,850,355	3,858,122
3,795,586	3,838,473	3,850,464	3,858,169
3,796,540	3,838,664	3,850,554	3,858,172
3,801,415	3,838,835	3,850,592	3,858,589
3,803,121	3,839,117	3,850,668	3,858,845
3,804,713	3,839,403	3,851,002	3,858,858
3,806,089	3,839,562	3,851,009	3,858,960
3,807,372	3,839,811	3,851,327	3,859,411
3,807,386	3,839,906	3,851,396	3,860,302

PATENT AND TRADEMARK OFFICE

Board of Appeals

Present Vacancies To Be Filled by Appointment Under the Classified Civil Service

Notice is hereby given that, pursuant to the amendment of sections 3 and 7 of title 35, United States Code, by Public Law 93–601 (88 Stat. 1956), effective January 2, 1975, examiners-in-chief will no longer be appointed by the President, by and with the consent of the Senate, to serve on the Board of Appeals of the Patent and Trademark Office. In accordance with the provisions of section 7, as amended by Public Law 93–601, present (and future) vacancies on the Board of Appeals will be filled by appointment of examiners-in-chief under the classified civil service. These appointments will be made at a salary in the range from $34,607 to $36,000 per annum.

Persons interested in being considered for these vacancies are invited to submit their applications to the address given below, or on or before March 21, 1975. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as a member of the Board of Appeals of the Patent and Trademark Office. As an Examiner-in-Chief, Participates in its appellate and administrative responsibilities and exercises independent judgment on all matters before him on appeal subject to administrative and policy direction of the Commissioner. Appeals filed in accordance with 35 U.S.C. 134 and Rules 191 through 198 of the Rules of Practice of the United States Patent and Trademark Office in Patent Cases involve complex legal and technical questions. The Board of Appeals has the sole power to hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patents and for reissue of patents. Final decisions of the Board, if unfavorable to an applicant, may be appealed to the United States Court of Customs and Patent Appeals or civil action may be taken in accordance with 35 U.S.C. 145.

Qualifications: Candidates must possess (1) a minimum of five years of patent experience of which at least two years involved the exercise of independent judgment in a responsible position as typified by the exercise of full signatory authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office; (2) a law degree or be a member in good standing of the bar in any state, D.C., Puerto Rico, or any territorial court under the constitution; (3) a high degree of demonstrated competence in chemistry, engineering, physics or other major scientific discipline; (4) ability to write clearly and logically; (5) comprehensive experience in patent prosecution. examination or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

Factors Which Will Be Considered in Evaluating the Candidates: Candidates will be evaluated on the total range of their education, training and experience as well as supervisory appraisals of past performance and potential. *Note*: The qualifications of the proposed incumbent will have to be reviewed and approved by the Department of Commerce and by the U.S. Civil Service Commission before an appointment can be made effective.

Employees of the Department of Commerce may apply by submitting a completed Merit Promotion Interest Statement, Form CD 261, and a completed SF 171, Personal Qualifications Statement, if one is not already on file at the address given below. Persons who are not employees of the Department of Commerce should submit only a completed SF 171. Copies of Form SF 171 may be obtained at local post offices. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Building 2, Room 9C05
Crystal Plaza
Arlington, Virginia 22202

Questions concerning this notice should be directed to Ms. Margaret M. Mazza, Office of Personnel, Room 2-9C05, Telephone (703) 557–3631.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

February, 1975.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 2, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-6-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-26-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-30-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-20-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-25-74

Expiration of patents: The patents within the range of numbers indicated below expire during February 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,821,713 to 2,825,063, inclusive
Plant Patents..... Numbers 1,677 to 1,685, inclusive

REISSUE PATENTS

GRANTED FEBRUARY 25, 1975

ERRATA

For CLASS	See PATENT NO.
165-019	28,343
308-003	28,344
083-157	28,345
296-137	28,346
250-562	28,347
423-325	28,348
033-344	28,349

Matter

LIQ

Herr

Original
312,01
27, 197

U.S. Cl.

1. A
maintaini
condition
A. a v
B. mea
C. mea
vapo
D. me
oper
mecl
E. me
tran
F [E]
ener
G [F]
fluid
H [G]
exch
I [H]
said
J [I].
fluid
K [J]
exch
L [K]
seco
M [L]
hot
seco

Anthony

Original
773,52
1972,
abando
13, 197

U.S. Cl.
1. An
nents rel
first ar
ber

REISSUES

FEBRUARY 25, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

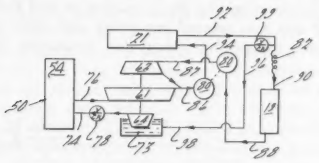
28,343
LIQUID-VAPOR CYCLE AIR-CONDITION SYSTEM

Herman B. Castillo, Clawson, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 3,799,243, dated Mar. 26, 1974, Ser. No. 312,012, Dec. 4, 1972. Application for reissue June 27, 1974, Ser. No. 478,153

Int. Cl. F24f *3/14*

U.S. Cl. 165—19 **31 Claims**



1. A liquid-vapor cycle air conditioning system for maintaining the air of an enclosure in a predetermined condition, said system comprising:

A. a vapor generator;

B. means for supplying a liquid to said generator;

C. means directing hot gases to said vapor generator to vaporize said liquid;

D. means receiving vapor from said generator and operative to transform heat energy of said vapor to mechanical energy;

E. means directing discharge fluid from said energy transforming means to said supplying means;

F [E]. a compressor driven by said mechanical energy;

G [F]. a first heat exchanger receiving a discharge fluid from said compressor;

H [G]. means directing enclosure air to said first heat exchanger;

I [H]. expansion means receiving discharge fluid from said first heat exchanger;

J [I]. a second heat exchanger receiving discharge fluid from said expansion means;

K [J]. means directing outside air to said second heat exchanger;

L [K]. means directing discharge fluid from said second heat exchanger to said compressor; and

M [L]. means for directing at least a portion of said hot gases into a heat exchange relation with said second heat exchanger.

28,344
SLIDE ASSEMBLY

Anthony T. Monaco, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

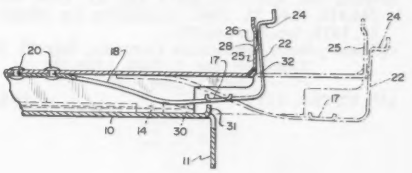
Original No. 3,527,508, dated Sept. 8, 1970, Ser. No. 773,522, Nov. 5, 1968. Application for reissue Jan. 31, 1972, Ser. No. 222,351, which is a continuation of abandoned reissue application Ser. No. 80,512, Oct. 13, 1970

Int. Cl. F16c *29/00*

U.S. Cl. 308—3.6 **17 Claims**

1. An assembly for slidably supporting two components relative to one another including in combination:

first and second channel members, said second member being guided for longitudinal sliding movement relative to the first channel member, one of said channel members carrying guiding means and the



other of said channel [member in] *members* carrying corrresponding guide engaging means, said first channel member having at least one slot therein;

a slot engaging means carried by the second channel member and resiliently biased toward the first channel member for engaging the slot on the first channel member when the two channel members are in a substantially closed position wherein the first and second channel members generally overlie one another throughout the major portion of the length; and

means for locking the slot engaging means out of engagement with the slot.

28,345
GUILLOTINES AND LIKE SHEARING MACHINES

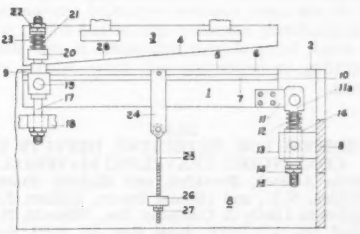
Emile Breetvelt, Johannesburg, Transvaal, Republic of South Africa, assignor to Intermenua (Proprietary) Limited, Johannesburg, Transvaal, Republic of South Africa

Original No. 3,757,621, dated Sept. 11, 1973, Ser. No. 116,041, Feb. 17, 1971. Application for reissue Mar. 19, 1974, Ser. No. 452,570

Claims priority, application Republic of South Africa, Feb. 20, 1970, 70/1,132; Sept. 15, 1970, 70/6,300; Oct. 5, 1970, 70/6,732

Int. Cl. B26d *1/00*

U.S. Cl. 83—157 **8 Claims**



1. A shearing machine including a first fixed blade and a second blade movable over the first blade to set up a shearing action along their leading edges, a continuous yieldable work support comprising a resilient member which is located in a resting position adjacent and along substantially the length of the leading edge of the

first fixed blade in the path of the second blade and biasing means acting to resist displacement of the resilient member from its resting position as the second blade is advanced over the first blade.

28,346

SLIDING COVER FOR ROOF OPENING IN A MOTOR VEHICLE

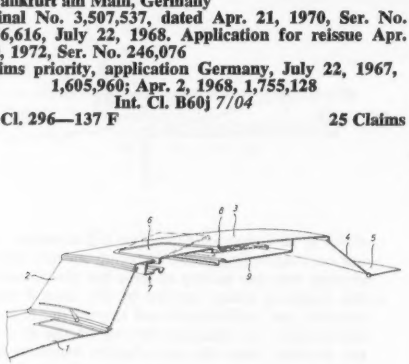
Herbert Kouth Kilianstadten, and Albert Schlapp, Sprendlingen, Germany, assignors to H. T. Golde G.m.b.H., Frankfurt am Main, Germany

Original No. 3,507,537, dated Apr. 21, 1970, Ser. No. 746,616, July 22, 1968. Application for reissue Apr. 20, 1972, Ser. No. 246,076

Claims priority, application Germany, July 22, 1967, 1,605,960; Apr. 2, 1968, 1,755,128

Int. Cl. B60j *7/04*

U.S. Cl. 296—137 F **25 Claims**



1. A motor vehicle body construction comprising a roof having an opening therein, a frame being secured to said roof and extending about and downwardly from the opening in said roof, said frame having a pair of oppositely disposed longitudinally extending sides, a pair of guide rails being supported by said frame and each of said guide rails extending along one of said longitudinally extending sides, a cover being mounted on and slidably positionable along said frame in the direction of said longitudinally extending sides, first means being located on each said longitudinally extending side of said frame and mounted on said guide rails, said first means being attached to said cover for sliding said cover along said guide rail and for pivoting said cover about an axis extending through said first means on the oppositely disposed longitudinally extending sides of said frame, second means being located on each said longitudinally extending side of said frame and mounted on said guide rails in spaced relationship with said first means, a pair of slides each being fixed to and extending along one of the sides of said cover disposed in parallel relationship with the longitudinally extending sides of said frame, said second means being slidably engageable in said slides for cooperating in positioning said cover relative to said opening.

28,347

SYSTEM FOR DETECTING DEFECTS IN CONTINUOUS TRAVELING MATERIAL

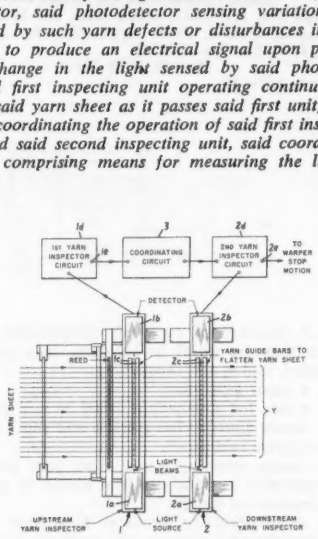
Solomon Abilock, Brooklyn, and Richard Shottenfeld, Jamaica, N.Y., and Thomas Brown, Taylors, S.C., assignors to Lindly & Company, Inc., Mineola, N.Y.

Original No. 3,717,771, dated Feb. 20, 1973, Ser. No. 130,700, Apr. 2, 1971. Application for reissue Mar. 22, 1974, Ser. No. 453,999

Int. Cl. G01n *21/32*

U.S. Cl. 250—562 **30 Claims**

54. An inspecting system for detecting yarn defects in a yarn sheet travelling lengthwise along a selected path comprising a first inspecting unit located on the path of travel of said yarn sheet and a second inspecting unit located on the path of travel of said yarn sheet at a selected distance downstream of the first inspecting unit, each of said inspecting units comprising means for guiding the yarn to flatten said yarn sheet, a light source positioned at one side of said flattened yarn sheet, a photodetector positioned at the opposite side edge of said sheet and having a light sensitive element, and means for directing a beam of light across the flattened yarn sheet from said light source onto the light sensitive element of said photodetector so that variations in the light beam caused by yarn defects or by transient disturbances in the yarn sheet such as "jumping yarn" produce variations in the light received by the light sensitive element of said photodetector, said photodetector sensing variations in light caused by such yarn defects or disturbances in the yarn sheet to produce an electrical signal upon predetermined change in the light sensed by said photodetector, said first inspecting unit operating continuously to inspect said yarn sheet as it passes said first unit, and means for coordinating the operation of said first inspecting unit and said second inspecting unit, said coordinating means comprising means for measuring the linear



travel of said yarn sheet past said inspecting units, means connecting said measuring means with said first inspecting unit to start measurement of said travel of said yarn sheet past said inspecting units upon production of a said signal by the photodetector of said first inspecting unit, continuing the measurement of linear travel of said yarn sheet only until the length measured is slightly greater than the distance between said inspecting units, and means controlled by said measuring means to produce an output signal only when a signal is produced by the photodetector of said second inspecting unit in the interval between the time said length of travel measured by said measuring means is slightly less than the distance between said units and the time said length measured by said measuring means is slightly greater than said distance, whereby an output signal is produced when a yarn defect of predetermined magnitude is detected successively by both of said inspecting units in predetermined sequence but not by transient disturbances in the yarn sheet.

28,348

PROCESS FOR PRODUCING SILICON OXYNITRIDE

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

No Drawing. Original No. 3,639,101, dated Feb. 1, 1972, Ser. No. 50,939, June 29, 1970. Application for reissue Jan. 18, 1973, Ser. No. 324,831

Int. Cl. C01b *21/06*

U.S. Cl. 423—325 **7 Claims**

1. In a method whereby Si_2ON_2 is produced from a reaction mix including a source of Si, a source of N and

a source of O, the improvement consisting of maintaining the reaction rate below R percent per hour, where $R=53.118/w^{0.308}$ and w is the furnace charge in pounds by [control of] *measuring said rate and controlling* the amount of gaseous nitrogen available to the reaction *in accordance with the measured rate.*

28,349

METHOD OF DAMPING DEVICES HAVING OSCILLATORY MOTION

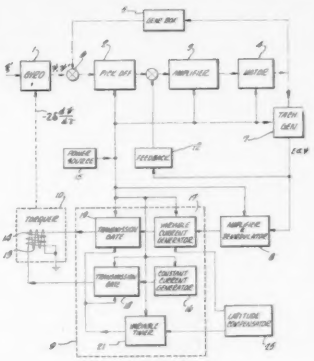
Harry Nils Eklund, Pacific Palisades, Calif., assignor to Lear Seigler, Inc., Santa Monica, Calif.

Original No. 3,577,646, dated May 4, 1971, Ser. No. 687,049, Nov. 30, 1967. Application for reissue May 4, 1973, Ser. No. 357,355

Int. Cl. G01c *19/38*

U.S. Cl. 33—344 **10 Claims**

1. A method of damping the motion of a mechanical system element which is oscillating about an equilibrium position, the motion of the element having a substantially undamped natural period of oscillation, the method comprising the step of applying supercritical damping force to the element for a selected interval of time commencing from when the ratio of the instantaneous velocity of the element toward its equilibrium position to the instantaneous displacement of the element from its equilibruim position is approximately equal to the [ratio of π to the product of the undamped natural period of oscillation and the damping ratio] *product of 4π and the*



damping ratio divided by the undamped natural period of oscillation.

PATENTS

GRANTED FEBRUARY 25, 1975

ERRATA

For CLASS	See PATENT NO.
085–021	3,867,864
085–062	3,867,865
105–366	3,868,083
277–134	3,868,105
277–030	3,868,104
277–237	3,868,106
210–522	3,868,335
330–130	3,868,598

Laurenc
Prairi
Becto

U.S. Cl.

1. A
prising:
a pair
each
con
tion
bre
the
the re
emb
the
flexibl
ably
fro
a shou
eac
means
tive
means
for
forc
fro
ing

Lawrenc
tries I

U.S. Cl.

1. In
portion,
joining s
face are

PATENTS

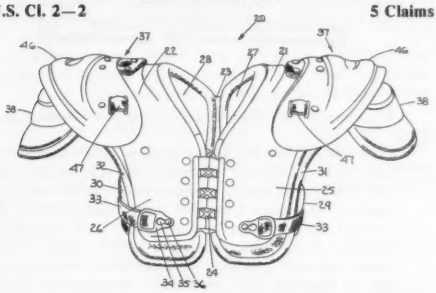
GRANTED FEBRUARY 25, 1975

GENERAL AND MECHANICAL

3,867,726
SHOULDER GUARD

Laurance J. Owl, Hastings, Minn.; Jimmy H. Cody, Grand Prairie, and Bill Kelley, Arlington, both of Tex., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed May 17, 1974, Ser. No. 470,723
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **5 Claims**



1. A semi-rigid protective shield device for athletes comprising:

a pair of opposingly formed and flexibly joined sections;

each section having an arcuate shoulder portion adapted to conformably embrace a shoulder and having front portions adapted to depend over the clavicular area and breast of the wearer and rear portions for depending over the shoulder blades;

the rear portions having integral lateral radial extensions for embracing the rib cage and terminating forwardly thereof;

flexible means on each of said lateral extensions for detachably and adjustably joining the same to said depending front portions;

a shoulder cap hingedly attached to the shoulder portion of each section;

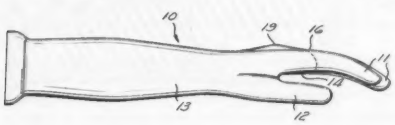
means hingedly connecting each shoulder cap to the respective shoulder portion of each section, and

means on the cap and shoulder portion positioned so as to form a flange pocket for the edge of cap to seat in when force is applied from the top or sides and restrain the cap from pressuring the athlete's shoulder while not restricting upward movement.

3,867,727
SURGEON'S GLOVE

Lawrence J. Povlacs, Dothan, Ala., assignor to Akwell Industries Incorporated, Dothan, Ala.

Filed Dec. 28, 1973, Ser. No. 429,178
Int. Cl. A41d *19/00*
U.S. Cl. 2—167 **2 Claims**

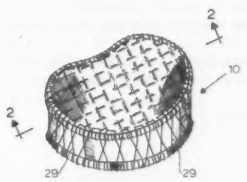


1. In a thin gauge elastomeric glove comprising a wrist portion, four finger portions, a thumb portion, a palm portion joining said finger, thumb, and wrist portions to form a front face area of the glove, a back portion joining said finger, thumb, and wrist portions to form a back face area of the glove, said glove having a central axis, said back portion including a knuckle area extending from said finger portions toward said wrist portion, said back portion being defined by a substantially straight line generatrix in substantial alignment with the central axis of said glove, the improvement wherein an outwardly directed bulge is provided on said back portion between said wrist portion and said knuckle area, wherein the finger, thumb and knuckle areas snugly fit the wearer's hand, and wherein all portions of the glove are of substantially uniform thickness.

3,867,728
PROSTHESIS FOR SPINAL REPAIR

James A. Stubstad, Lafayette, Calif.; James R. Urbaniak, Durham, N.C., and Paul Kahn, San Francisco, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 214,344, Dec. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 109,101, Jan. 25, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,140
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **40 Claims**



1. A resilient shaped prosthesis for replacement of a damaged or degenerated spinal disc, comprising:

a spinal-disc-shaped element having two generally flat faces, and

wherein said element is a laminated sandwich of horizontal shaped sheets of elastomer and horizontal shaped sheets of fabric-reinforced elastomer, all outer surfaces consisting of elastomer.

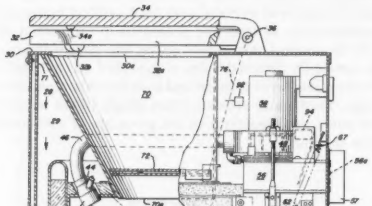
3,867,729
INCINERATOR

Robert C. Helke, Walworth, Wis., assignor to La Mere Industries Inc., Walworth, Wis.

Filed Aug. 17, 1973, Ser. No. 389,140
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 **19 Claims**

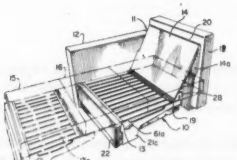
1. An incinerator comprising a casing, wall means defining a combustion chamber in said casing having an outlet exhaust duct extending to the exterior of said casing, inlet means in said casing for delivering waste material to be burned to said combustion chamber, a fuel burner for burning the waste material during a burning cycle in said combustion chamber, means for cooling the combustion chamber during a cooling cycle, and control means for activating both said burner and said cooling means and for deactivating said burner means including a temperature sensor for sensing a predetermined

elevated temperature of said combustion chamber and fuel valve means for deactivating said burning means responsive to



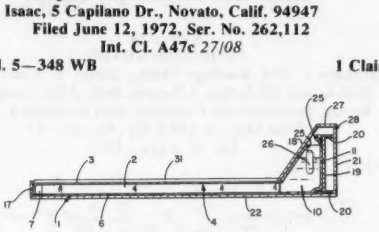
said elevated temperature without deactivating said cooling means at said temperature.

3,867,730
SOFA-BED
Jerauld George Wright, 10 Wren Rd., Ottawa, Ontario, Canada
Filed Sept. 13, 1973, Ser. No. 396,772
Claims priority, application Canada, Sept. 18, 1972, 151957
Int. Cl. A47c *17/14*
U.S. Cl. 5—37 C **44 Claims**



1. A sofa-bed comprising a base, and convertible seating and bedding means including three generally planar sections supported on said base and comprising a back-rest section pivotally connected at opposite transverse edges to a seat section and rear section respectively, a support member mounted on the underside of said seat section and slidable upon said base, said support member having a rear end which extends rearwardly of said seat section, said convertible means being movable on said base between a seating configuration, in which the seat section is generally horizontal, the back-rest section extends upwardly at a slight rearward inclination and the rear section is generally upright, and a bedding configuration in which the three sections are generally horizontal and said seat section extends forwardly of said base, said seat section support member resting upon said base in both configurations wherein said seat section includes foot means to support the front portion thereof upon a floor when in the bedding configuration, said rear section being pivotally supported intermediate its length on said base such that in the seating configuration a portion of said rear section extends downwardly beyond said pivotal support.

3,867,731
LIQUID SUPPORTING FURNITURE
Earl J. Isaac, 5 Capilano Dr., Novato, Calif. 94947
Filed June 12, 1972, Ser. No. 262,112
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB **1 Claim**



1. In a support for floatingly supporting at least one human body;

a single substantially stationary bladder of flexible substantially inelastic material defining a load supporting chamber, said bladder having an upper wall of sufficient size to support the human body and being constrained in the vertical direction, the height of said load supporting chamber being sufficient that a human body on said upper wall conforms the wall to the lower body surfaces and is floatingly supported above the bottom of said bladder;

a body of liquid enclosed within and filling said bladder so there is substantially no air therein;

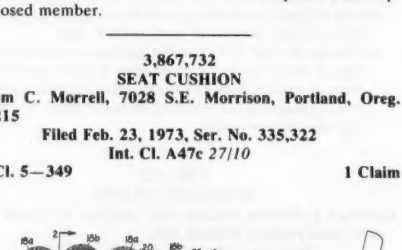
a head tank forming an end portion of said bladder and carrying a head of liquid in communication with said body of liquid and extending at all times upwardly from the upper wall of said bladder; and

a single rigid circumscribing framework enclosing said single bladder and being separable therefrom;

said end portion of said bladder having opposite walls respectively secured to opposed members of said single rigid framework, one of said opposed members being adjustably positioned with respect to the other to selectively vary the distance therebetween;

whereby the liquid pressure in said load supporting member is adjusted by means of movement of said adjustably positioned framework member with respect to said opposed member.

3,867,732
SEAT CUSHION
William C. Morrell, 7028 S.E. Morrison, Portland, Oreg. 97215
Filed Feb. 23, 1973, Ser. No. 335,322
Int. Cl. A47c *27/10*
U.S. Cl. 5—349 **1 Claim**



1. A seat cushion comprising

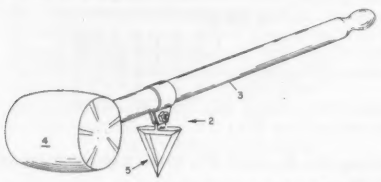
a. a flexible support member,

b. an upholstery cover for said flexible support member having an upper surface,

c. means in said upholstery cover defining a plurality of transverse individual parallel pockets extending from side to side of the seat cushion,

d. each of said pockets having a bottom opening disposed approximately centrally between the two sides,
e. a first set of fillable flexible tubes supported on said flexible support member and being confined within alternate one of said pockets,
f. a second set of fillable flexible tubes supported on said flexible support member and confined in pockets alternately spaced between said first pockets,
g. said tubes having inlet connections substantially centrally thereof for projection from said openings in the pockets,
h. continuous powered fluid supply means having hoses secured to said inlet connections and being arranged to feed and discharge fluid in said tubes,
i. a center groove in the front and upper surface of said flexible support member receiving said hoses, the upper surface of said upholstery assuming the contour of the upper portion of the individual tubes,
j. and cycle control means for said fluid supply means arranged to admit fluid to said first set of tubes while discharging fluid to atmosphere from the second set of tubes and vice versa whereby to vary points of support for a person seated on the seat.

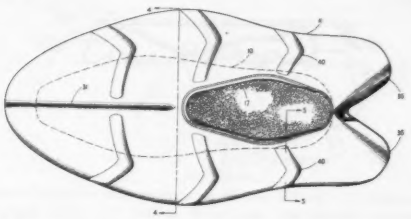
3,867,733
STAKE PULLER
Donald M. Verlander, 314 Saipan, San Antonio, Tex. 78221
Filed Aug. 31, 1973, Ser. No. 393,453
Int. Cl. B25f *1/00*; B66f *15/00*
U.S. Cl. 7—8.1 R **4 Claims**



1. An apparatus for removing tent stakes from the ground consisting of a hook member with means for connecting the hook member to a tent stake, said hook member also having connecting means to connect the hook member to a lever arm, said hook member having an opening therethrough, said opening being of generally triangular configuration and large enough for a tent stake to extend therethrough, said hook member having a generally wedge shaped external configuartion with downwardly converging knife edged sides terminating in a pointed tip.

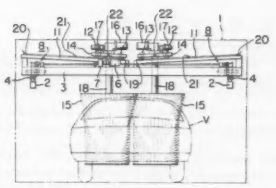
3,867,734
SWIMMING FLIPPER
Huguette Fernande Fery Courageux, 5 rue de Verdun, Massy, France
Continuation-in-part of Ser. No. 354,354, April 25, 1973, abandoned. This application Nov. 14, 1973, Ser. No. 415,817
Claims priority, application France, Nov. 20, 1972, 72.41165
Int. Cl. A63b *31/10*
U.S. Cl. 9—309 **7 Claims**

7. A swimming fin to be worn on the foot as a swimming aid comprising:
a shoe having an upper and a sole, said upper having a periphery defining an opening adapted to receive and fit about the ankle of the wearer, said shoe being integrally molded in one piece from a rubber-like flexible material;
a skirt formed integrally with and in one piece with said shoe, said skirt surrounding said upper and having an upper continuous edge and a lower continuous edge at least twice as long as said upper continuous edge, said skirt being integrally connected, at its upper edge to the periphery defining the opening of said upper;
a web connecting the heel portion of the upper with the heel portion of the skirt, said web extending from the bottom of the heel upwardly to the juncture between the skirt and periphery of the opening of the shoe upper;
a web connecting the toe region of the skirt and shoe upper and extending from the bottom of the toe region substantially along the longitudinal center line of the shoe and upwardly toward said periphery of said opening in said upper;



said webs being integrally molded in one piece with said shoe and said skirt;
said upper, skirt and webs defining a plurality of water receiving compartments on opposite sides of the longitudinal center line of the shoe.

3,867,735
SIDE BRUSH OPERATING MEANS FOR A VEHICLE CLEANING APPARATUS
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Aichi-ken, Japan
Filed Mar. 22, 1973, Ser. No. 344,038
Claims priority, application Japan, May 25, 1972, 47-51191
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **2 Claims**

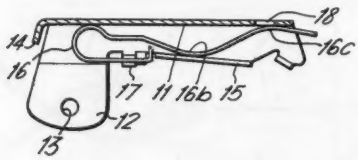


1. A vehicle cleaning apparatus of the type including a portal frame through which a vehicle to be cleaned progresses, said apparatus comprising: a pair of fixed guide rails arranged on the opposite sides of said portal frame in spaced parallel relation to each other and extending forwardly downwardly in the direction of travel of the vehicle, a trolley mounted on said fixed guide rails, a motor for driving said trolley along said pair of fixed guide rails, said motor being capable of operating continuously to exert a constant torque even when forced to stop rotation under a predetermined load above a predetermined level, and a pair of side brush units mounted on said trolley for movement toward and away from each other lengthwise thereof.

3,867,736
CONNECTING MEMBER FOR WINDSHIELD WIPER BLADE
Dario Arman, Piazza Adriano 15, Turin, Italy
Filed July 19, 1973, Ser. No. 380,637
Claims priority, application Italy, July 24, 1972, 69398/72
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **4 Claims**

1. A connecting member for securing windshield wiper blades to the end of a swinging arm, comprising a channel-

shaped element provided at one end with means for articulating the member to a wiper blade, stop teeth near the other end of said element, and a hole in said element defining a seat, and a leaf spring within said element and secured at one end to said element, said leaf spring having two oppositely curved portions along its length, one of said curved portions being



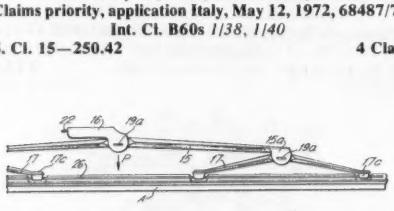
arranged to urge the end of a swinging arm coupled to said element toward said stop teeth so that the latter engages notches in the lateral edges of the swinging arm, and the second of said curved portions being arranged to urge the end of another type of swinging arm coupled to said element toward said hole seat so that a pin carried by the arm is pushed into said hole seat.

3,867,737

MOLDED PLASTIC SUPPORT FOR WIPER BLADES OF WINDSCREEN WIPER EQUIPMENT ON MOTOR VEHICLE

Dario Arman, Piazza Adriani 15, Turin, Italy

Filed May 10, 1973, Ser. No. 358,883
Claims priority, application Italy, May 12, 1972, 68487/72
Int. Cl. B60s *1/38, 1/40*
U.S. Cl. 15—250.42 **4 Claims**



1. Support made of molded plastic, for wiper blades of windscreen wiper equipments on motor vehicles, characterized in that the articulate coupling between the connecting member and the main bar of the support as well as between the ends of the bar and the central point of each rocker arm, is provided by metal plates engaging corresponding transversal seats which are coinciding and formed in the articulation points.

3,867,738

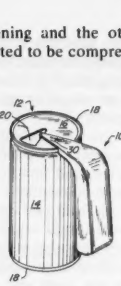
REMOVABLE HANDLE FOR BEVERAGE CONTAINING CANS AND METHOD OF MOUNTING SAME

David L. Garner, Evergreen, Colo., assignor to Duane Burton, Boulder; Ralph F. Crandell and Gary M. Polumbus, both of Denver, all of, Colo., part interest to each

Filed Jan. 30, 1974, Ser. No. 437,827
Int. Cl. A47b *95/02*
U.S. Cl. 16—114 **12 Claims**

1. A removable handle for beverage containing cans which has a slotted opening in one end, said handle comprising:

a grip portion adapted to extend along a side of the can, and a connecting arm portion connected to the grip portion and extending across at least a portion of said one end of the can, said connecting arm portion having spaced retention means thereon, one of said retention means being adapted to extend into said slotted opening in the one end of the can and be releasably retained in the slot by a side edge of said opening and the other of said retention means being adapted to be compressively engaged with a



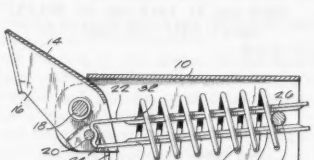
side of the can effecting a tension in the connecting arm to securely attach the handle to the can.

3,867,739

HINGE FOR COVER LID ON CHESTS

Henry A. Schnuell, Milwaukee, Wis., assignor to E. R. Wagner Manufacturing Company, Milwaukee, Wis.

Continuation of Ser. No. 356,736, May 3, 1973, abandoned.
This application June 3, 1974, Ser. No. 475,454
Int. Cl. E05f *1/12*
U.S. Cl. 16—190 **4 Claims**



1. A hinge for the cover of a freezer cabinet or the like comprising:

a. a spring housing secured to said freezer cabinet;
b. a lid for said cabinet;
c. a mounting bracket secured to said lid;
d. a pivot pin interconnecting said spring housing and said mounting bracket;
e. said mounting bracket having a spring follower pin radially offset from said pivot pin;
f. a spring engaging pin on said spring housing remote from said pivot pin;
g. a coiled compression spring in said spring housing reacting between said spring follower pin and said spring engaging pin; and
h. a U-shaped spring guide member having (1) an enlarged bearing portion, and (2) spaced elongated legs located partly within said compression spring, said bearing portion extending for the length of said spring follower pin and rotatably seated on and swinging with said spring follower pin; said coiled compression spring reacting between said spring follower pin and said enlarged bearing portion.

3,867,740

METHOD AND APPARATUS FOR PROCESSING SHRIMP

Robert L. Lapine, Wells, and Bernard C. Brower, Gladstone, both of Mich., assignors to Harry H. Bell & Sons, Inc., St. Petersburg, Fla.

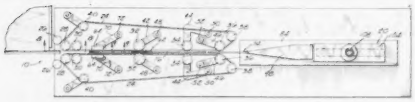
Filed Jan. 24, 1973, Ser. No. 326,158
Int. Cl. A22c *29/00*
U.S. Cl. 17—72 **28 Claims**

1. Shrimp processing apparatus for processing a deheaded and unshelled shrimp comprising:

a cutter station having a cutter means mounted thereat for cutting through the belly of a shrimp to the alimentary

canal of the shrimp, said cut starting at the tail of said shrimp and leaving the shell uncut;

a spreader station having a spreader means mounted thereat for spreading the portions of the shrimp on opposite sides



of the cut therein to thereby cause the shrimp to assume a substantially flat position with the shell attached to the shrimp; and

a conveyor means for conveying a shrimp first through said cutter station and then through said spreader station.

3,867,741

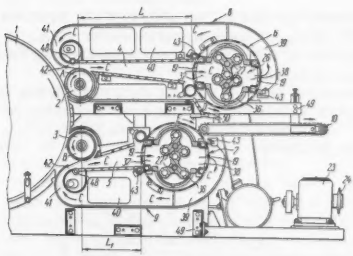
METHOD OF AERODYNAMIC FORMATION FOR A FIBROUS LAYER FROM FIBERS TREATED ON A CARDING MACHINE AND APPARATUS FOR PERFORMING THIS METHOD

Veniamin Dmitrievich Frolov, ulitsa 2 Lagernaya, 55, kv. 57; Fedot Evdokimovich Yatsenko, ulitsa 2 Lagernaya, 50, kv. 39; Viktor Vladimirovich Pertsev, ulitsa 2 Lagernaya 50, kv. 12; Valery Dmitrievich Rubtsov, ulitsa 2 Lagernaya, 53, kv. 46; Vitaly Alexandrovich Belyankin, ulitsa 2 Lagernaya, 46, kv. 15, all of Ivanovo; Viktor Vasilievich Matveev, Michurinsky prospekt, 30, kv. 55, and Max Khatskelevich Bernshtein, Michurinsky prospekt, 16, kv. 26, both of Moscow, all of U.S.S.R.

Continuation of Ser. No. 351,005, April 13, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 450,153

Int. Cl. D01g *15/46, 25/00*

U.S. Cl. 19—106 R **7 Claims**



1. A method of aerodynamic formation of a fibrous layer from fibres treated on a carding machine, comprising the steps of doffing the fibres from the main drum of said carding machine in at least two different points, the speed and the direction of doffing in said at least two points being different; conveying said fibres doffed in each one of said points in an individual air stream over paths of different lengths from the respective ones of said points toward rotating condensers, forming on said condensers upon rotation thereof respective fibrous layers from said doffed fibres conveyed over said different lengths, so that said fibres acquire in one of said layers an orientation which is different from the orientation of the fibres in the other one of said layers, combining said layers into a single common layer; delivering said layer for further treatment.

3,867,742

FASTENINGS FOR ROOF AND WALL SHEETING

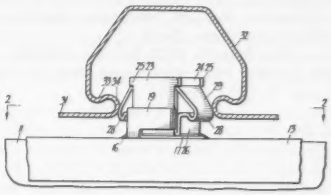
George Alfred Braisby Austin, 3 Prior Rd., Noble Park, Victoria, Australia

Filed Oct. 1, 1973, Ser. No. 400,587

Claims priority, application Australia, Sept. 25, 1972, 563/72

Int. Cl. A44b *21/00*

U.S. Cl. 24—73 **5 Claims**



1. Means for fastening ribbed sheeting on a support member comprising an anchor strap for mounting on the support member, several fastening members mounted pivotally on the anchor strap in linearly spaced relationship, and for each of the fastening members a spring mounted on the anchor strap in operable rotative engagement with the associated fastening member, each of the fastening members having at least one cam shaped part for engagement by the sheeting and operable under axial pressure applied to the cam shaped part by the sheeting to turn the fastening member against the pressure of the spring from an operative position to an inoperative position whereat the sheeting may be moved into its mounted position, the spring being operable to rotatively move the fastening member to its operative position in holding engagement with the ribbed portion of the sheeting.

3,867,743

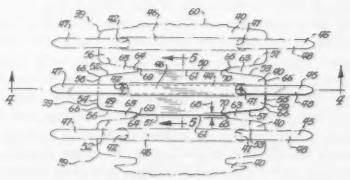
FASTENER DEVICE

Joseph T. Corey, Williamsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Division of Ser. No. 225,207, March 25, 1970, Pat. No. 3,741,385, which is a continuation-in-part of Ser. No. 22,519, Feb. 10, 1972, Pat. No. 3,641,632. This application May 29, 1973, Ser. No. 364,962

Int. Cl. A44b *9/00*

U.S. Cl. 24—153 BP **8 Claims**



1. A unitary assembled fastener device adapted to be secured to a backing member for fastening papers or the like comprising an overlay member having opposite end portions and a central portion and an upper surface and an undersurface, a pair of spaced apertures in said opposite end portions, said apertures being substantially completely surrounded by adjacent portions of said overlay member, an elongated prong member having a central portion and opposite prong end portions, said opposite prong end portions extending through said spaced apertures and overlying said upper surface on said end portions, said central portion of said prong member lying in contiguous relationship to said central portion of said undersurface whereby said apertures maintain said overlay member and said prong member in assembled condition, and adhe-

sive means on said undersurface sufficiently proximate said central portion of said elongated prong member for securing said undersurface to said backing member to hold said central portion of said elongated prong member against said backing member.

3,867,744

APPARATUS FOR UNFOLDING, SPREADING AND GUIDING A TRAVELLING KNITTED FABRIC

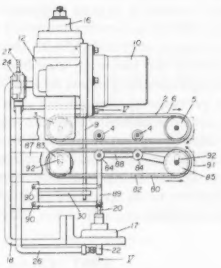
Isamu Tsuchida, No. 29, 6-chome, Zuiko-dori, Higashiyodogawa-ku, Osaka, Japan

Filed May 31, 1973, Ser. No. 365,450

Claims priority, application Japan, Aug. 21, 1972, 47-97957; Jan. 18, 1973, 48-8043

Int. Cl. D06c *3/06*

U.S. Cl. 26—54 **2 Claims**



1. An apparatus for unfolding, spreading and guiding a travelling knitted fabric comprising travellable endless belts disposed at the opposite edges of the travelling knitted fabric respectively on one face of the fabric and positioned transversely of the fabric, each of the travellable endless belts having an engageable working surface including projections extending in the direction of travel of the endless belt, push members opposing the travellable endless belts respectively positioned at the side of the other face of the fabric and transversely thereof, each of the push members comprising an endless belt having a working surface engageable with the working surface of the associated travellable endless belt and including projections extending in the same direction as the projections of the travellable endless belt so as to interpose the travelling fabric between the working surface of the travellable endless belt and the working surface of the endless belt push member, means for driving the travellable endless belts and the endless belts serving as push members at variable speeds individually whereby the endless belt member of each pair of opposed such members at each edge of the fabric at the side thereof wherein the selvage is turned-up may be driven at a higher speed than the opposing endless belt member in directions to spread the fabric and to unfold turned-up selvages of the same, selvage sensing means disposed adjacent the travellable endless belts, and means for moving each of the endless belt push members toward or away from the associated travellable endless belt in accordance with the positions of the selvages in response to the operation of said selvage sensing means.

3,867,745

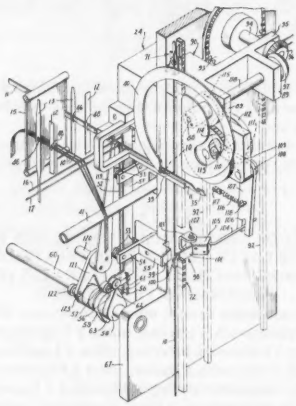
METHOD FOR DRAWING IN WARP THREADS

Charles B. Crandall, and Frederick L. Wieneke, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Division of Ser. No. 262,105, June 12, 1972, Pat. No. 3,787,938. This application Sept. 20, 1973, Ser. No. 398,970

Int. Cl. D03j *1/16*

U.S. Cl. 28—72.5 **4 Claims**



1. In a method of initially drawing threads of yarn from a warp beam through the successive sets of the weaving elements of a loom, the steps of, drawing a short pilot length of yarn through the first set of weaving elements separated from the loom and warp beam while leaving an end portion of the yarn exposed in front of said elements, and similarly threading a short pilot length of yarn through each of the other sets of weaving elements.

3,867,746

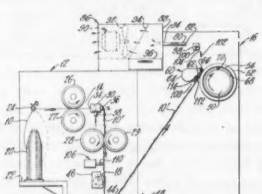
METHOD OF TREATING AND COLLECTING YARN

Gustav E. Benson, Edgewood, and Everett W. Taylor, Cumberland, both of R.I., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Division of Ser. No. 241,173, April 5, 1972, Pat. No. 3,776,183. This application June 6, 1973, Ser. No. 367,592

Int. Cl. D02g *1/16;* **B65h** *55/04*

U.S. Cl. 28—72 SP **3 Claims**



1. The method of treating yarn at the start-up of a rotary collector upon which the treated yarn is collected as a wound package comprising:

advancing yarn to an auxiliary collection zone as the rotary collector is brought up to speed;

transferring collection of the yarn from the auxiliary collection zone to a temporary collection location on the rotary collector when the rotary collector is at a selected speed;

applying a coating to the yarn in its path to the collector; and

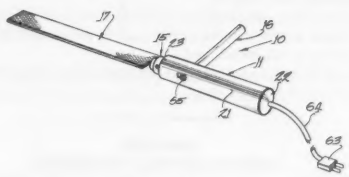
moving collection of the yarn from the temporary collection location to a package formation located on the collector after arrival of liquid treated yarn to the collector.

3,867,747

POWER DRIVEN FILE

Robert E. Lee, 627 N. 20th, Escanaba, Mich. 49829

Filed Feb. 22, 1974, Ser. No. 444,795
Int. Cl. B23d *69/00*
U.S. Cl. 29—76 A **1 Claim**



1. A power driven file comprising, in combination:

an elongated hollow cylindrically shaped housing having a closed back end, an open front end, and cylindrical side wall surfaces;

an elongated file member having a reduced width longitudinally extending flattened shank;

an elongated cylindrically shaped compartment defined interiorly of said housing and opening out of said open front end thereof;

a chuck disposed in said front end of said housing compartment projecting outwardly of said front end and guided for reciprocal movement along the interior front end portion of the side walls of said compartment in a back-and-forth manner along the lor.gitudinal axis of said housing, said chuck comprising:

an elongated cylindrical body member having a flat front end, a flat back end, and cylindrical side walls of a diameter adapted to be slidingly received in said front end of said housing;

a diametrically extending slot extending longitudinally into said chuck through said chuck front end and adapted to receive therein said reduced width shank of said file blade member therein;

a threaded opening disposed in said chuck side wall surfaces axially aligned with the diametric axis of said slot and extending radially outwardly from an interior portion of said slot to a position projecting through said side walls of said chuck body member;

a threaded set screw having an allen head type drive socket at an exterior end thereof adapted to be threadedly received in said threaded opening and having an inner end adapted to frictionally engage an edge of said file blade shank inserted into said slot to removably retain said blade affixed to said chuck for simultaneous movement therewith;

an electrically powered motor means disposed in said housing compartment adjacent said back end thereof and having its longitudinal axis disposed parallel to the longitudinal axis of said housing compartment;

a flexible electrical cord having one end electrically connected to said motor with the opposite end thereof projecting outwardly of said housing back end and terminating in an electrical plug adapted to be pluggeed into a conventional source of household electrical energy to energize said motor from said electrical energy source;

an electrical switch mounted in said housing compartment and having an actuating member projecting exteriorly of said compartment side walls, said electrical switch being electrically wired in series relationship between said electrical cord and said electric motor for controlling the selective energization and de-energization of said electric motor from said source of electrical energy;

a shaft extending axially from a front end surface of said motor pointing in the direction of said housing open front end and rotatively driven by said motor;

a first bevel gear having its base portion disposed concentric and affixed to the projecting end of said electric motor shaft;

a second bevel gear disposed at a ninety degree angle to the axis of said first bevel gear and rotatively affixed to said housing for rotation interiorly of said housing compartment, said second bevel gear disposed in meshing engagement with the teeth of said first bevel gear;

said second bevel gear having a flattened top surface disposed concentric with the top edges of the teeth of said gear;

a cylindrical rod shaped pin member having one end affixed to a peripheral edge of said second bevel gear top flat surface with said pin member projecting outwardly therefrom in a direction parallel to the axis of rotation of said second bevel gear, said direction of projection being normal to the plane of said second bevel gear;

a link member of an elongated flat configuration having an aperture extending through each end thereof;

the aperture at one end of said link member rotatively receiving said pin member projecting therethrough;

a U-shaped yoke having a bight portion and opposed parallel leg portions, said yoke bight portion affixed to said back end of said chuck with said leg portions projecting outwardly therefrom straddling the axis of said chuck;

a connecting pin extending between said leg members of said yoke adjacent the outermost ends thereof;

said connecting pin passing through said other aperture of said link member to pivotally secure said link member thereto;

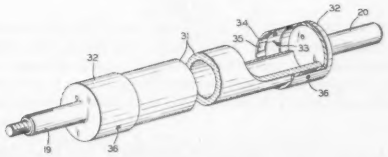
whereby rotational movement of said motor is translated by said first and second bevel gears, said pin member, said link member, and said yoke to translational motion of said chuck relative to said housing to drive said chuck in a reciprocal manner inwardly and outwardly of said housing to effect reciprocal back-and-forth movement of said file blade member affixed to said chuck.

3,867,748

SUPPORTING AND DRIVING FRANGIBLE ROLLERS

Alfred H. Miller, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Mar. 7, 1974, Ser. No. 449,192
Int. Cl. B60b *15/16*
U.S. Cl. 29—115 **10 Claims**



1. In a conveyor roller usable in the heat treatment of glass sheets and which includes a ceramic cylinder, shafts located at and in alignment with the ends of said cylinder, and means for drivingly connecting said cylinder with at least one of said shafts; the improvement in which said connecting means comprises a cylindrical member rotatable with said one of said shafts and that is in circumferential contact with said ceramic cylinder adjacent an end thereof and partially encloses a cavity between said cylindrical member and said ceramic cylinder; and a supply of a heat expandable adhesive in said cavity.

3,867,749

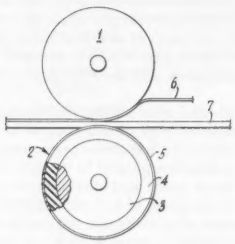
PRESS DEVICE FOR PRESSING LIQUID FROM A FIBROUS BODY

Erich Betz, Worms, Germany, assignor to DLW Aktiengesellschaft, Bietigheim/Wurtt., Germany

Continuation of Ser. No. 197,846, Nov. 1, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 416,915

Int. Cl. B21b 27/02

U.S. Cl. 29—121 R 6 Claims



1. In a press drum having a wrapping for use in the process of dewatering a loose wet fibrous body such as wet paper pulp, the improvement comprising:

a. an envelope of yieldable material to cover said drum, and

b. a linear wire wrapped about said envelope, said wire consisting of predrawn synthetic material having a linear body alternately provided in sequence with attenuations and concentrations along said body's length, whereby said wire as a result of said shape induces a pumping action which improves the function of dewatering said paper pulp during processing.

3,867,750

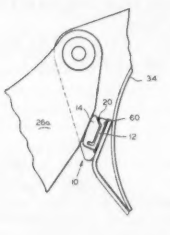
MACHINERY STOP AND METHOD OF INSTALLATION

Joseph R. Den Bleyker, Stevensville, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Sept. 27, 1973, Ser. No. 401,462

Int. Cl. B21k 19/00

U.S. Cl. 29—148.3 6 Claims



1. A machinery stop for the handling of very large dynamic forces in the form of heavy blows comprising a weldable base portion, a weldable adjustment portion overlying the said base portion and resiliently joined thereto in an uninstalled condition, and a weld joining the said adjustment and base portions in the installed condition of the stop member.

5. The method of locating an adjustable stop between two abutable machine members which comprises securing to one of the abutable members a stop having a resilient adjustable portion arranged to be contacted by the other abutable member, moving the other abutable member to contact and flex the said adjustable portion thereof until the desired limit is reached, and at least partially welding the said adjustable portion to a base portion of the said stop while the other abutable member remains in contact with the said adjustable portion.

3,867,751

SINTERED BLANKS

Gordon Sidney Connell, Cheltenham, and Paul Egan, Harescombe, both of England, assignors to Fornflo Limited, Gloucestershire, England

Filed Oct. 5, 1972, Ser. No. 296,368

Int. Cl. B21h 1/12

U.S. Cl. 29—148.4 R 11 Claims

1. A method of preparing an inner or outer bearing ring comprising the steps of:

a. forming a substantially cylindrical sintered powder metal blank having a density of at least 96 percent of the density of the solid metal, and

b. roll forming said blank to the shape of said required inner or outer bearing ring.

3,867,752

TUBE-INSERTING APPARATUS

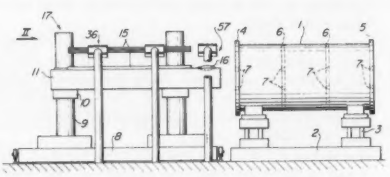
Keiji Tachibana, Tokyo; Toru Watanabe, Ebina, and Hisao Tamura, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 2, 1973, Ser. No. 375,819

Claims priority, application Japan, July 3, 1972, 47-59522; July 3, 1972, 47-59524

Int. Cl. B23p 15/26

U.S. Cl. 29—202 R 4 Claims



1. A tube-inserting apparatus comprising a tube bed which is laterally and vertically movable relative to the direction in which tubes are inserted into a mating shell, a plurality of tube-guiding means arranged in parallel on the tube bed along the direction of tube insertion, tube-pushing means provided reciprocably on the tube bed for cooperation with the tube-guiding means, and means for automatically feeding tubes to the tubeguiding means.

3,867,753

UNIVERSAL CARD EXTRACTOR TOOL

Ellison C. Urban, II, San Diego, and Carl L. McKee, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1974, Ser. No. 452,109

Int. Cl. B25b 27/14

U.S. Cl. 29—203 H 10 Claims

1. A universal hand extractor tool for lifting and removing components of various sizes from their housing comprising:

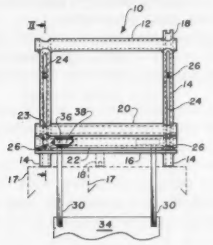
a fixed handle;

a pair of leg members, each member fixedly secured at one end to the fixed handle in spaced parallel relation, each leg member terminating at another end adapted to engage the top of said housing;

a movable handle member supported on said leg members in substantially parallel relation to said fixed handle member, both handles being adapted to be spanned by the hand of the user;

a pair of fingers suspended at their upper ends from said movable handle, and being transversely movable independently thereon between said leg members;

the lower ends of said fingers having means for engaging the component to be extracted;



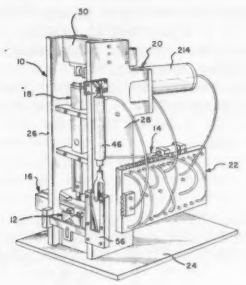
whereby the lateral spacing between the fingers may be adjusted for lifting components of various widths.

3,867,754

STRIPPER CRIMPER MACHINE

Robert Milton Koch, and Donald Andrew Wion, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 22, 1974, Ser. No. 445,035
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DS **16 Claims**



1. A fluid actuated semi-automatic stripper crimper apparatus for stripping insulation from the free end of a wire and crimp connecting an electrical terminal from a continuous strip of terminals onto the free end of said wire, said apparatus comprising:

frame means,

wire clamping means mounted on said frame means including a pair of normally spaced clamping blocks and means adapted to drive said blocks together to clampingly secure a wire between said blocks,

a stripper assembly including means mounting said assembly in said frame means for horizontal reciprocating motion, wire insulation cutting means, means adapted to drive said cutting means into cutting engagement with the insulation of said wire, and means to drive said assembly axially of said wire to strip a severed slug of insulation therefrom,

a bottom tooling assembly disposed behind said wire clamping means and beneath said stripper assembly, said tooling assembly including a fixed anvil and vertically moveable terminal shear means,

terminal strip feed means adapted to feed a continuous strip of terminals through said shear means to a position above said anvil,

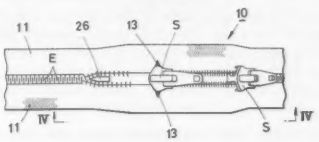
ram means mounted in said frame for vertical reciprocable motion, said ram means including a crimping ram, means adapted to drive said ram into contact with said terminal and at least one die means depending from said ram, and a force cam assembly disposed to drive between an upper portion of said ram and a fixed abutment, after said ram has made initial contact with said terminal, to apply a crimping force to said ram whereby said terminal is severed from its associated carrier strip and crimped to the stripped end of said wire.

3,867,755

METHOD OF AND APPARATUS FOR APPLYING SLIDERS TO A SLIDE FASTENER CHAIN

Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,927
Claims priority, application Japan, Dec. 27, 1972, 48-1526
Int. Cl. B23p *11/00*
U.S. Cl. 29—408 **2 Claims**



1. A method of applying sliders to a slide fastener chain having a pair of opposed stringer tapes carrying rows of fastener elements along their respective inner longitudinal edges, which method comprises the steps of:

a. providing transverse slits across the inner longitudinal edges of the stringer tapes at spaced locations along the fastener chain;

b. moving the fastener chain intermittently along a first or horizontal path of travel and a second path extending at an angle downwardly inclined relative to said first path, said first and second paths merging at a cornering point in a slider assembling station;

c. separating the opposed stringer tapes along their inner longitudinal edges prior to the mounting of sliders thereon;

d. deflecting the fastener chain downwardly around said cornering point, whereupon said transverse slit is split open with its upper edge aligned with an entrance end of the slider;

e. mounting the slider on the fastener chain through said slit positioned at said cornering point; and

f. advancing the fastener chain a distance corresponding to a length of individual product fastener to which the chain is to be cut.

3,867,756

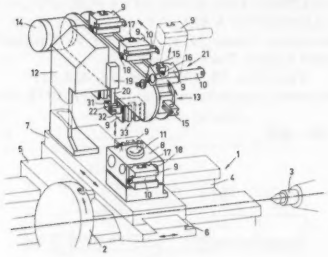
ARRANGEMENT FOR CHANGING TOOL-SUPPORTING TOOL HOLDERS ON A MACHINE TOOL ASSEMBLY

Hans Joachim Koch, Hannover-Buchholz, and Wolfgang Schaefer, Langenhagen, both of Germany, assignors to Werkzeumaschinenfabrik Gildemeister & Comp. A.G., Bielefeld, Germany

Filed July 13, 1973, Ser. No. 378,981
Claims priority, application Germany, July 14, 1972, 2234676
Int. Cl. B23q *3/155*
U.S. Cl. 29—568 **3 Claims**

1. Arrangement for changing tool-supporting tool holders on a machine tool assembly, such as a lathe, comprising at least one workpiece holder; a tool turret having at least two tool holder clamping means and being displaceable relative to said workpiece holder; a tool holder magazine positioned above said turret and displaceable in directions corresponding to said turret displacement; a tool holder transfer means for transferring said tool holders back and forth between the magazine and the turret, said tool holder transfer means in-

cluding gripper means for the tool holders to be transferred and being adapted to, on changing being effected, transferring a particular tool holder out of a clamping position in said magazine in a single rectilinear linear movement into a clamping position on said turret and conversely; each said clamping means on said turret being provided with at least one rib extending in the direction of the liner movement thereof and each tool holder being provided with a complementary longi-



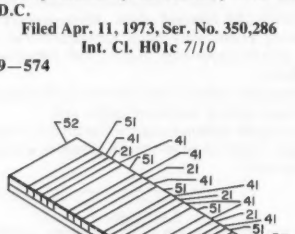
tudinal recess, said longitudinal recess and said rib, and the direction of said linear movement being at a small acute angle with respect to each other, so that the ribs and the longitudinal recess are separated from each other perpendicular to the longitudinal direction of the rib and the longitudinal recess when the particular tool post is displaced by said tool holder transfer means from a change position identical with the clamping position on said turret to the magazine, thereby performing said linear movement.

3,867,757

METHOD OF FABRICATION OF A PHOTON SENSOR

Reinhard D. Ennulat, Alexandria; Paul LoVecchio, Reston; Wolfgang Elser, Alexandria, all of Va., and Philip R. Boyd, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 11, 1973, Ser. No. 350,286
Int. Cl. H01c *7/10*
U.S. Cl. 29—574 **5 Claims**



1. a method for the fabrication of an IR sensing element comprising the steps of:

depositing a first continuous layer of photoconductive materials having an exposed outer-surface on a nonconductive substrate;

applying uniform spaced parallel stripes of photoresist material to said planar surface, the width of the spaces between said stripes being many times the width of said stripes;

applying an etchant to the unprotected photoconductive material to expose the portions of the substrate covered thereby;

removing the photoresist to expose the remaining channels of said photoconductive material;

oxidizing the exposed surface of the photoconductive material remaining to increase its interface resistance;

depositing a subsequent layer of said photoconductive material on said nonconductive substrate and channels remaining from preceding steps;

applying a subsequent set of uniform parallel stripes of photoresist material over said channels and at least a portion of exposed substrate adjoining the long edges thereof;

etching away exposed portions of said subsequent layer;

removing the photoresist from said subsequent layer;

oxidizing said subsequent layer;

repeating the above steps involved in forming said subsequent layer using progressively wider stripes of photoresist material on each subsequent layer of photoconductive material until their width approximates their initial spacing;

attaching a pair of ohmic contacts to the opposite edges of said substrate parallel to but spaced from said channels;

depositing a final continuous layer of photoconductive material over the last subsequent layer and at least a portion of the surface of said contacts providing a final exposed surface; and

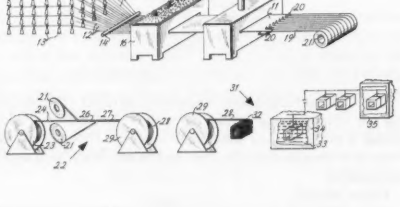
alternately etching said final exposed surface and measuring the resistance between said ohmic contacts until the resistance of the sensing element increases to at least several megohms.

3,867,758

METHOD OF MAKING GLASS INSULATED ELECTRICAL COILS

Daniel B. Johnson, Muskegon, Mich., assignor to The Anaconda Company, New York, N.Y.

Division of Ser. No. 377,163, July 6, 1973, Pat. No. 3,842,193.
This application May 15, 1974, Ser. No. 470,085
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **4 Claims**



1. The method of making an electrical coil comprising the steps of;

A. drawing a length of wire to a preselected cross-sectional area and shape,

B. supporting a large plurality of continuous glass fibers adjacently positioned in substantially planar configuration and advancing said fibers through enamel-coating apparatus, thereby coating said fibers with a continuous film of said enamel,

C. passing said fibers through a baking zone, thereby drying said enamel and forming a wide band of longitudinally glass-fiber-reinforced enamel insulation,

D. dividing said band into a plurality of individual tapes,

E. helically wrapping said tapes around a continuous bare length of said wire to form insulated conductor,

F. winding said conductor into an electrical coil,

G. saturating said coil with insulating enamel,

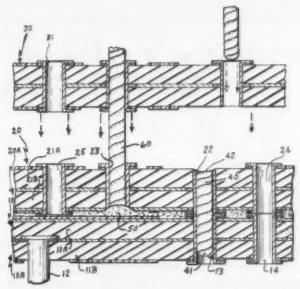
H. baking said coil being coated with said enamel.

3,867,759

METHOD OF MANUFACTURING A MULTI-LAYERED STRIP TRANSMISSION LINE PRINTED CIRCUIT BOARD INTEGRATED PACKAGE

Robert G. Siefker, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of United States Air Force, Washington, D.C.

Filed June 13, 1973, Ser. No. 369,654
Int. Cl. H05k *3/36*
U.S. Cl. 29—628 **2 Claims**



1. A method of manufacturing a multi-layered strip transmission line printed circuit board integrated package, as adapted for use as a strip transmission line manifold assembly, wherein at least a first strip transmission line printed circuit board and a second strip transmission line printed circuit board are to be fixedly joined and positioned in stacked relationship and in electrical interconnection, to form the multi-layered integrated package, comprising the steps of:

a. fabricating a first plurality of segments which collectively constitute and define the first strip transmission line printed circuit board;

b. joining the first plurality of segments in coplaner relationship, whereby the first strip transmission line printed circuit board is formed, and whereby the first layer of the multi-layered integrated package also is formed;

c. fabricating a second plurality of segments which collectively constitute and define the second strip transmission line printed circuit board;

d. joining the second plurality of segments in coplaner relationship, whereby the second strip transmission line printed circuit board is formed, and whereby the second layer of the multi-layered integrated package is also formed;

e. drilling a first plurality of signal path holes in and through each of the first plurality of segments which form the first strip transmission line printed circuit board;

f. drilling a second plurality of signal path holes in and through each of the second plurality of segments which form the second strip transmission line printed circuit board;

g. plating, with an electrically conductive material, each signal path hole drilled through each of the first plurality of segments which form the first strip transmission line printed circuit board;

h. plating, with an electrically conductive material, each signal path hole drilled through each of the second plurality of segments which form the second strip transmission line printed circuit board;

i. inserting a different electrically conductive stranded wire having a first end and a second end into each plated signal path hole in each of the first plurality of segments which form the first strip transmission line printed circuit board, with each said electrically conductive stranded wire inserted into its particular and individual signal path hole in first-end-first position;

j. soldering, in place, said first end of each of said different electrically conductive stranded wires, thereby providing electrical contact by and between each first end of each of said conductive wires and the plated hole in which said first end is located;

k. feeding the second end of each different electrically conductive wire into a different one of the plated signal path holes in each of the second plurality of segments which form the second strip transmission line printed circuit board;

l. soldering, in place, said second end of each of said different electrically conductive stranded wires, thereby providing electrical contact by and between each second end of each of said conductive wires and the plates hole in the second printed circuit board in which said second end is located, and also thereby providing electrical conductivity between said first and said second strip transmission line printed circuit boards;

m. and, bonding said second strip transmission line printed circuit board to said first strip transmission line printed circuit board in stacked relationship;

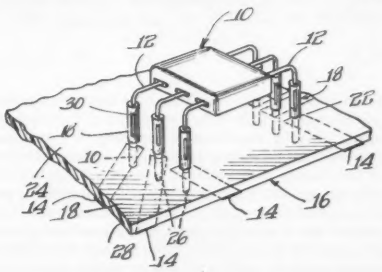
whereby the desired multi-layered strip transmission line printed circuit board integrated package is formed; and, whereby by cascading the interconnection, an integrated package of as many layers as desired may be formed without having to penetrate more than two adjacent layers of circuit boards at any one time.

3,867,760

PRINTED CIRCUIT BOARD LEAD WIRE RECEPTACLE

Stanley V. Horecky, Oak Park, and Cletus McDonough, Elmurst, both of Ill., assignors to Molex Products Company, Downers Grove, Ill.

Continuation of Ser. No. 141,523, May 10, 1971, abandoned, Division of Ser. No. 798,936, Feb. 13, 1969, Pat. No. 3,621,445. This application June 29, 1973, Ser. No. 375,237
Int. Cl. H01r *9/00*; **H05k** *3/32*
U.S. Cl. 29—628 **3 Claims**



1. A process for making electrical connections between a plurality of lead wires and a printed circuit board support surface having aligned apertures of predetermined diameter, said method comprising the steps of: forming a series of spaced apart tubular terminal connector members from flat strip material each said terminal being attached at spaced intervals to a linking strip; providing each tubular terminal connector with a longitudinal seam the edges of which are spaced apart along at least a portion of said connector; and further providing said connector with a tubular leading end portion and a tubular trailing end portion and with there being an axially presented positive stop shoulder at the junction of said end portions of minimum diameter greater than the predetermined diameter of the support surface apertures and with the trailing end portion having a resilient restriction in the bore thereof; and providing that the linking strip is attached to the trailing end portion only of each member, opposite to the longitudinal seam thereof, such that each leading end portion is free for insertion into a supporting surface whereby the respective connector members are joined entirely through said linking strip; simultaneously inserting the leading end portions of said terminal connector members into corre-

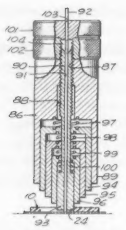
sponding apertures in said support surface, while resilient compressing said connector member thereof to a degree permitting insertion thereof in said aperture to obtain a friction fit, while maintaining the diameter of said shoulders greater than the predetermined diameter of the support surface apertures and engaging said shoulder with said support surface to locate accurately the leading and trailing end portions of the tubular body from opposite sides of the support surface; connecting said terminal connector members to said support surface; severing said terminal connector members from said linking strip; and inserting a plurality of said lead wires respectively into said terminal connector members through the trailing end portions thereof an amount sufficient such that electrical connections are made between said terminal connector members and said lead wires at said resilient restrictions.

3,867,761

INSTRUMENT FOR INSCRIBING PARALLEL LINES

Bill A. Abad, 1423 N. Fuller Ave., West Hollywood, Calif. 90046

Filed Aug. 10, 1973, Ser. No. 387,469
Int. Cl. B43l *13/02*
U.S. Cl. 33—41 F **6 Claims**



1. An instrument for inscribing on a surface a line which is uniformly spaced from either a straight or curved edge at a selected distance therefrom, comprising: a barrel part; an inscribing point projecting axially from one end of said barrel part and having a longitudinal axis, the instrument having means through which the inscribing point extends in a position so that said means engages the edge surface adjacent to which a parallel line is to be inscribed, said means having a curved surface parallel to said axis so that it has only line contact with said edge whereby said means can be guided along said edge, whether straight or curved so as to inscribe a line parallel to it, said barrel part comprising a plurality of telescoping tube parts which are relatively adjustable axially so that an end of a selected tube can be positioned to be guided by said edge.

3,867,762

DRAWING INSTRUMENT

Akira Hirano, 178 Kashira-machi, Sin Karasuma, Kamigyo-ku, Kyoto, Japan

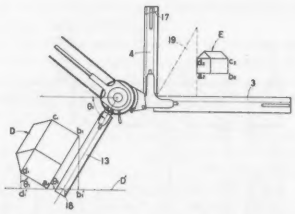
Filed July 14, 1972, Ser. No. 271,646
Claims priority, application Japan, July 14, 1971, 46-52340; July 14, 1971, 46-52337; July 14, 1971, 46-52338; July 14, 1971, 46-52339
Int. Cl. B43l *13/14*
U.S. Cl. 33—77 **3 Claims**

1. A drawing instrument for use in drafting the anonometric projection drawing from the multiview projection drawing, comprised of the following components;

a. a parallel transferring mechanism with which a ruler orienting and arranging means is transferred parallel to itself and the angle changing mechanism with which the ruler arranging means angle is altered;

b. a horizontal ruler attached to the arranging means of the drawing instrument;

c. a vertical ruler attached to the arranging means of the drawing instrument at a right angle to the horizontal ruler and provided with the standard line extending traversely thereof near the free end and making an angle of inclination of 75° to the ruler edge face, said vertical ruler having a stopper member located thereon near the arranging means;



d. an auxiliary ruler pivotally mounted on an end of said arranging means for independent rotation relative to said vertical and horizontal rulers, the position of said pivotal mounting being at a location on said arranging means remote from said attachment of said horizontal and vertical rulers such that they extend in substantially opposite directions;

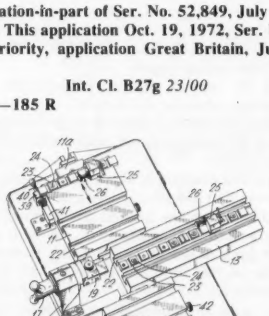
e. an angular ruler arranged to sliding engage said horizontal ruler and said stopper for drawing a line at a certain angle from a definite point on the ruler face and located adjacent to said auxiliary ruler and slidable therealong.

3,867,763

SETTING FIXTURE FOR MACHINE TOOLS

Albert Arthur Wilkins, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England

Continuation-in-part of Ser. No. 52,849, July 7, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 300,582
Claims priority, application Great Britain, July 7, 1969, 34135/69
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **6 Claims**



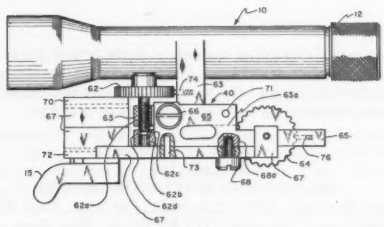
1. A setting fixture for a machine, said fixture comprising a support, at least two slide-representing parts mounted on the support, means on the support for carrying a workpiece, said slide-representing parts having respective sets of spaced mounting means, a setting block detachably securable to any one of said mounting means, and an adjustable stop detachably securable to the setting block, and means for mounting tool holders from a machine on the respective slide-

representing parts, in equivalent relationship to the workpiece to their positions on the machine, and adjustable stops mounted on each part by means of respective setting blocks, said adjustable stops being adjustable to engage the tool holders respectively.

3,867,764
AIMING LIGHT AND AIMING LIGHT ADAPTER FOR USE ON A WEAPON

Howard L. Dunmire, Woodbridge, and Michael Hacskaylo, Falls Church, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 24, 1973, Ser. No. 354,034
Int. Cl. F41g *1/34*
U.S. Cl. 33—241 **5 Claims**



1. An aiming light for aiming a small caliber weapon comprising:

an aiming light housing comprising a projecting lens held in the forward end of said housing by a transparent window lens retainer and a screw threaded end cap threadably connected on the back end of said housing;

a light emitting means within said housing wherein said light emitting means comprises a dry cell battery positioned adjacent said cap, a canister containing an electronic pulser circuit having a beveled outer edge at an output end which fits snugly against a beveled canister retainer connected to said housing adjacent said projecting lens and an input end adjacent to and in electrical contract with one terminal of said battery, and circuit means including an electrical contact mounted on said cap for electrically connecting the other terminal of said battery with the input end of said canister retainer, with said output end having a light emitting diode therein whereby tightening of said cap on said housing completes the circuit between said battery and said input end of said canister, causing a pulsing light beam to be emitted from said light emitting diode; and

an aiming light adapter attached between said weapon and said aiming light housing, said adapter comprising a vertical adjusting means and a horizontal adjusting means wherein said vertical adjusting means is connected to a moulded portion of said aiming light housing and positions said pulsing light beam in the vertical direction and wherein said horizontal adjusting means is connected to said vertical adjusting means and positions said pulsing light beam in the horizontal direction.

3,867,765
POLE KILN AND METHOD FOR DRYING LOGS

Anthony Foster, Paradise, Calif., assignor to Koppers Company, Inc., Pittsburgh, Pa.

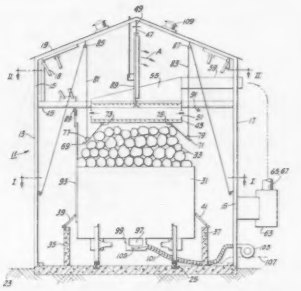
Filed Apr. 8, 1974, Ser. No. 459,011
Int. Cl. F26b *7/00*
U.S. Cl. 34—13.8 **16 Claims**

1. A drying kiln comprising:

a. a shed covering one or more carriers of articles to be dried;

b. end closures on said shed;

c. means for introducing heat into said shed at a location above said articles;



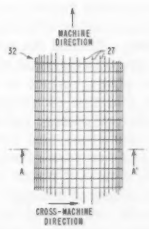
d. baffles that coact with said one or more carriers and prevent said heat from flowing beneath said carriers; and

e. means for circulating said heat within said shed.

3,867,766
DRYER FABRIC FOR A PAPERMAKING MACHINE

Joseph Robert Wagner, Leeds, England, assignor to Huyck Corporation, Stamford, Conn.

Continuation of Ser. No. 692,806, Dec. 22, 1967, abandoned.
This application Mar. 19, 1973, Ser. No. 342,806
Int. Cl. F26b *13/26*
U.S. Cl. 34—95 **18 Claims**



1. A papermaking machine including,

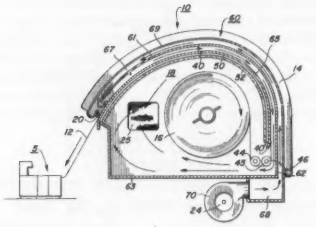
a. An array of heated, generally cylindrical rolls for drying a continuous web of material passing at least a portion of the surface thereof; and,

b. An endless, fluid permeable backing fabric associated with said array of dryer rolls and arranged to maintain the web in intimate contact with at least a portion of the surface of each of said dryer rolls, the permeability to fluids of said fabric varying selectively at selected points across its width dimension, said areas of said fabric having a high permeability lying adjacent those areas of the paper web having a high moisture content and said areas of said fabric having a low permeability lying adjacent those areas of the paper web having a low moisture content.

3,867,767
PRECONDITIONER FOR PAPER STOCK

John S. Wright, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 25, 1973, Ser. No. 373,080
Int. Cl. F26b 13/10
U.S. Cl. 34—155 4 Claims



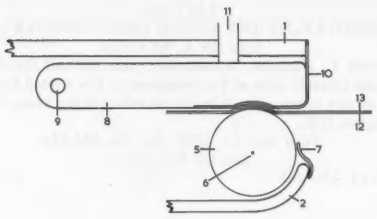
1. In an apparatus for supplying paper, the combination of:
a substantially closed housing having at least a discharge opening for said paper;
a supply of said paper in said housing;
means presenting a platen surface across which said paper is adapted to move as the paper is withdrawn from said housing through said discharge opening;
means for heating said platen surface to dry said paper as the paper is withdrawn from said housing;
means to circulate air through said housing, said air circulating means including at least one air inlet opening, and fan means adapted when energized to circulate said air; and
baffle means for routing said circulating air first into juxtaposition with said platen surface whereby to prevent overheating of said paper while assuring uniform heating thereof and then into juxtaposition with said paper supply whereby to precondition said paper supply preparatory to movement of said paper across said platen, said baffle means include a baffling member disposed opposite to and spaced from said platen surface, said baffling member cooperating with said housing to form a first air passage paralleling the direction of movement of said paper and communicating with said fan means through which air from said fan means circulates; said baffling member cooper with said platen surface to form a second air passage between said first air passage and said platen surface, said second air passage paralleling the direction of movement of said paper, said second air passage receiving air from said first passage and circulating said air into juxtaposition with said platen in reverse flow with respect to the movement of said paper, said paper moving through said second passage and across said platen surface as the paper is withdrawn from said housing and means to discharge said air from said housing.

3,867,768
SEAL

Guillaume Ward Jamin, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 30, 1974, Ser. No. 437,879
Claims priority, application Great Britain, Mar. 2, 1973, 10235/73
Int. Cl. F26b 25/00
U.S. Cl. 34—242 4 Claims

1. A sealing means for permitting continuous pasage of a web material through a gap in a wall separating two zones at different pressures whilst minimising the flow of air from one zone to the other, comprising, built into the gap, two bearing members between which the web material passes, the first bearing member comprising a series of parallel, closely abutting, fingers which extend the full length of the gap, said fingers being pivoted on an axle which is parallel to a longitudinal edge of the gap, and each of the fingers being pressure loaded towards the second bearing member so as to maintain

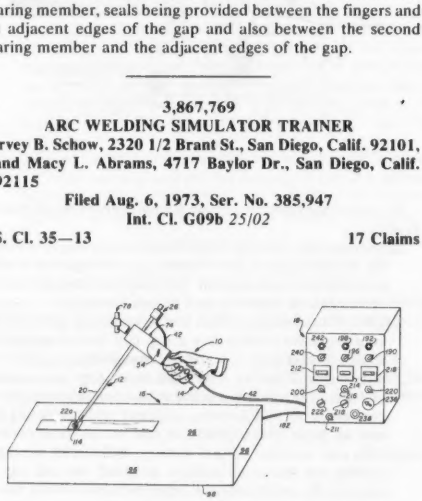


firm contact with either the web material or with the second bearing member, seals being provided between the fingers and the adjacent edges of the gap and also between the second bearing member and the adjacent edges of the gap.

3,867,769
ARC WELDING SIMULATOR TRAINER

Harvey B. Schow, 2320 1/2 Brant St., San Diego, Calif. 92101, and Macy L. Abrams, 4717 Baylor Dr., San Diego, Calif. 92115

Filed Aug. 6, 1973, Ser. No. 385,947
Int. Cl. G09b 25/02
U.S. Cl. 35—13 17 Claims



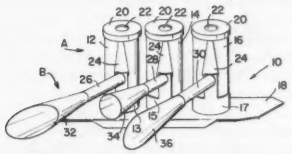
1. An arc welding simulator for teaching an operator the various motor skills comprising:
a work surface componet including a movable simulated welding puddle;
means for moving said puddle with a predetermined movement simulating a weld path;
a welding rod holder component to be manually manipulated by the operator relative to the work surface component;
a simulated welding rod component movably supported by said holder for following said movable puddle;
means for moving said welding rod relative to the holder at a rate simulating consumption of the welding rod;
means on the welding rod for sensing the distance between the end of the welding rod and the puddle which distance comprises a simulated arc length;
said components providing practice for the behavior skills involved in the welding process; and
sensor circuits operatively connected to selected components for providing immediate feedback signals to the operator indicative as to his proficiency in the various behavior skills during his simulated welding pass.

3,867,770

SPEECH THERAPY DEVICE

Michael S. Davis, 730 Boris Ct., Rohnert Park, Calif. 94928

Filed Nov. 14, 1973, Ser. No. 415,571
Int. Cl. G09b *19/04*
U.S. Cl. 35—35 R 17 Claims



1. Apparatus for indicating and teaching proper tongue formation for speaking, said apparatus comprising:

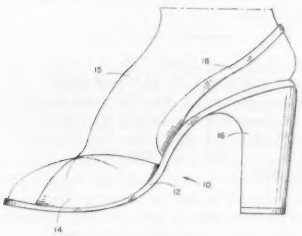
means for at least partially capturing the air expelled from the mouth of an individual, said capture means including means for isolating the respective air expelled from different parts of the mouth; and means for visually indicating the magnitude of air expelled from each said different part of the mouth.

3,867,771

RESILIENT RETAINER FOR HEEL STRAP OF A SHOE

Beth Levine, c/o Herbert Levine, Inc., 161 Sixth Ave., New York, N.Y. 10013

Filed Mar. 13, 1974, Ser. No. 450,891
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 10 Claims



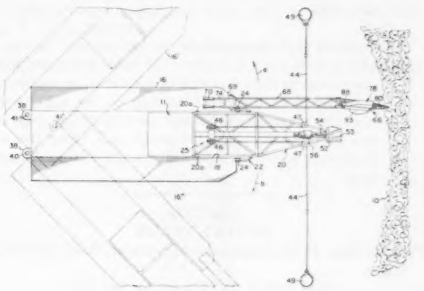
1. In a shoe, an insole; elastic means fixed to said insole in the region adapted to support the lower arch of a human foot; said elastic means including free end portions substantially directed in respective opposing lateral sides of said insole; a substantially inelastic heel strap having each free end thereof connected to a respective end portion of said elastic means and suitable for extending behind and resiliently engaging the arch of the foot above the heel when the foot is fully received in the shoe, the free ends of said heel strap being orientable and disposable in selective positions relative to said insole in response to stretching and deformation of said elastic means, whereby the effective length of said heel strap can be changed and the latter can accommodate itself to feet of different sizes and shapes and changing positions of the foot during walking while maintaining a comfortable fit for the wearer.

3,867,772

METHOD OF EXCAVATING TO FORM OR ENLARGE A WATERWAY

Leward N. Smith, 491 Somerset Saginaw, Remus, Mich. 48603

Division of Ser. No. 221,538, Jan. 28, 1972, Pat. No. 3,777,375. This application July 23, 1973, Ser. No. 381,705
Int. Cl. E02f *5/28*
U.S. Cl. 37—195 5 Claims



1. A method of enlarging an underwater basin or body of water having an earth bank with chippable material such as brush, trees, roots and the like growing at the bank comprising the steps of:

breaking up and collecting earth material and mixing it with liquid to form a slurry, and then applying forces to the collected earth slurry to remove it to a remote location; simultaneously forcing the above ground chippable material, such as brush, forwardly toward the above ground material behind it to bunch the chippable material; and

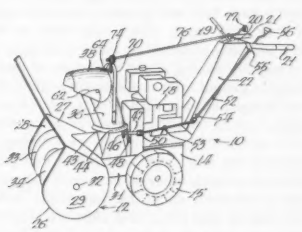
reducing the bunched chippable material to chips and fragments and mixing them with said liquid so that said chippable material is removed with said slurry to said remote location.

3,867,773

ADJUSTABLE DEFLECTOR FOR SNOW REMOVAL MACHINE

Ralph R. Gunderson, 8212 S. Homan, Chicago, Ill. 60652

Filed May 21, 1973, Ser. No. 362,386
Int. Cl. E01h *5/00*
U.S. Cl. 37—43 R 10 Claims



1. A snow removal machine, comprising,

a. a wheeled chassis having a prime mover and a control station,

b. a snow removal frame on the chassis including a snow gathering housing,

c. snow removal blades rotatable in the housing,

d. an upwardly directed snow discharge chute rotatable on the housing about an upright axis,

e. a deflector pivotally mounted on the upper end of the chute for movement between an upper position and a

lower position and means for normally urging said deflector toward said upper position, and

f. means for pivotally adjusting the deflector from the control station, including

F-1. a support bracket having a cable guide,

F-2. means mounting the bracket with the cable guide in line with the axis of rotation of the chute,

F-3. a single cable having one end secured to the deflector for moving said deflector toward said lower position, and

(f-4)

A roatable shaft mounted on the bracket and having an end portion positoned above the cable guide and being connected to the other end of the cable, an intermediate portion of the cable bearing on the cable guide whereby rotation of the end portion of the shaft advances the cable past the guide and about the end portion to move the deflector toward said lower position.

3,867,774

PICTURE FRAME

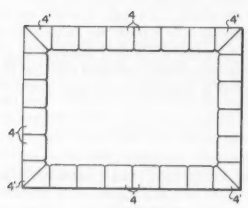
Katsuko Kise, 35-10, Asakusabashi 1-chome, Daito-ku, Tokyo, Japan

Filed June 4, 1973, Ser. No. 366,573

Claims priority, application Japan, June 7, 1972, 47-67198 [U]; Oct. 31, 1972, 47-125890 [U]

Int. Cl. G09f 1//12

U.S. Cl. 40—155 **2 Claims**



1. A picture-frame assembly for mounting within a decorative peripheral frame a work, such as a picture, photograph or the like, said assembly comprising a planar board having a front and a back face and generally sized to approximate the size of said work upon which said work is adapted to be placed, a plurality of relatively small individual clips adapted to be releasably placed about the edges of said work and of said board to extend from engagement against the face of said work to engagement against the rear face of said board, said clips being formed of resilient material and configured to hold said work and said board together by a spring force created therebetween by said clips, said board and said clips being sized relative to each other so that each individual clip occupies only a relatively small fraction of the periphery of said assembly and so that when said clips are placed immediately adjacent each other along the edges of said board and of said work they substantially occupy the entire periphery of said assembly without gaps between said clips, with said clips extending a distance over the face of said work to form a continuous decorative border therefor, said board including spaced horizontal and spaced vertical graduation means, said graduation means being spaced a distance substantially equal to the width of one or more of said clips, whereby said board may be separated at selected graduation means to thereby adapt the board to the size of the work with the number of clips utilized to form said frame being variable depending on the selected size of said board.

3,867,775

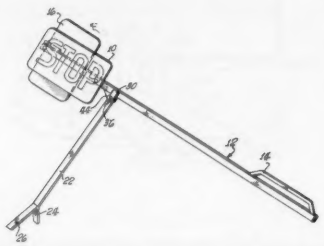
FLAGMAN SIGNAL DEVICE

James O. Lapham, San Dimas, and Richard C. Atha, Hacienda Heights, both of Calif., assignors to James O Lapham, Covina, Calif.

Filed Nov. 30, 1973, Ser. No. 420,450

Int. Cl. G09f 7/18; E01f 9/10

U.S. Cl. 40—125 H **3 Claims**



1. A highway flagman signal device comprising:

a warning signal bearing a warning legend,

a long bar rigidly fixed at one end to said sign with the longitudinal axis of the bar substantially parallel to the plane of the sign and having a handle at the other end adapted to be manually held,

a support leg having a ground engaging end,

means pivotally joining the other end of said leg to said bar at a position between said sign and handle and close to said sign on a pivot axis substantially normal to said sign plane and bar axis for selective swinging of said leg between an extended position wherein the leg is extending transversely of said bar to provide a pivotal ground support for supporting said signal device held in a position of use wherein said bar is generally horizontal and a retracted position wherein said leg rests against said bar with its ground engaging end adjacent said handle, and

said legend being disposed in a normal reading position for oncoming motorists when said signal device occupies said position of use.

3,867,776

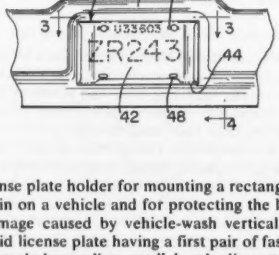
LICENSE PLATE HOLDER

Carl W. Drummond, Rt. 3, Box 216, and Donald L. Weber, 171 Ash St., both of Lake Zurich, Ill. 60047

Filed July 9, 1973, Ser. No. 377,511

Int. Cl. G09f 7/00

U.S. Cl. 40—209 **3 Claims**



1. A license plate holder for mounting a rectangular license plate therein on a vehicle and for protecting the license plate against damage caused by vehicle-wash vertical axis rotary brushes, said license plate having a first pair of fastener openings positioned along a line parallel and adjacent a first elongated edge, said holder comprising: an integral sheet of stiffly resilient material having overall dimensions at least slightly greater than said license plate, said sheet material having

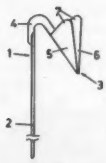
vertical edges folded at the lateral extremes thereof to provide a single lock fold, at each of said lateral vertical edges; said holder having each lateral bent-back marginal portion thereof bent rearwardly along vertical bend regions located between the respective lateral edges of the holder and respective adjacent fastener openings; said vertical bend region defining a raised offset central panel in said holder, and wherein each of said bent-back portions form an obtuse angle with the rear face of said raised offset central portion; said holder also having an elongated single lock fold extending along that edge of said offset central panel opposite the first edge for securing an opposing portion of said plate thereunder, said elongated single lock fold extending between said bend lines, and being positioned to receive the corresponding edge of said license plate thereunder when said fastener openings of said plate and said holder are in register; said holder having a second pair of openings in the central portion thereof adjacent said elongated single lock fold for passage of fasteners therethrough, said openings being in register with said fastener openings on said license plate when said license plate is mounted in said holder; said lateral vertical single lock folds being spaced-apart from each other a sufficient distance to receive the lateral edges of said license plate therein, and for said holder to receive said plate parallel therewith.

3,867,777

IDENTIFICATION TAG FOR ANIMALS AND/OR AN APPLICATOR FOR IDENTIFICATION TAGS

Douglas John Potter, Kelso No. 5 R.D. Gore, Southland, New Zealand

Filed Sept. 26, 1973, Ser. No. 400,913
Int. Cl. G09f 3/04
U.S. Cl. 40—301 **4 Claims**



2. The combination comprising an animal identification ear tag applicator comprising an elongated member having a pointed end substantially C-shaped for forming a slit in an ear of an animal to which an ear tag is to be applied, said member having a hollow interior at said pointed end and a closed slot along the longitudinal axis of said member near said pointed end; and a resilient one piece animal identification ear tag comprising a holding head, an indicia bearing panel and a thickened angular neck portion connecting said head to said indicia bearing panel and defining an acute angle therebetween, the holding head consisting of three abutment shoulders extending away from the thickened neck portion, each of said shoulders including a triangular wing of thin cross section, the first and second wings being in one plane and the third wing extending normal to said plane and centrally disposed between said first and second wings, said first and second wings being characterized by resiliently folding substantially parallel to the third wing for insertion in said closed slot so that the three abutment shoulders of the head are juxtaposable in parallel in the closed slot of the elongated member;

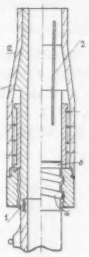
said slot being substantially near said pointed end of said applicator so that when the front of the ear of the animal is slit by the end of the pointed member the holding head retained within said slot of the applicator is carried substantially through the slit whereupon the holding head is angled to abut the slit and the abutment shoulders are adapted to engage the rear end of the closed slot to eject the holding head from the closed slot, thereby allowing the resilient folded first and second wings to open and assume an extended position with the head abutment shoulders engaging the rear side of the animal's ear.

3,867,778

AUTOMATIC CHOKE FOR HUNTING RIFLES

Giuliano Preda, Via Mezzofanti 77, and Romolo Marchi, Via Pellegrino Matteucci 10, both of Bologna, Italy

Filed May 2, 1973, Ser. No. 356,436
Claims priority, application Italy, May 4, 1972, 3413/72; Dec. 7, 1972, 3609/72
Int. Cl. F41c 21/00
U.S. Cl. 42—79 **17 Claims**



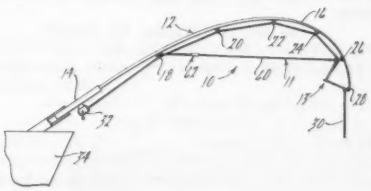
1. A progressive automatic choke for a buckshot rifle having a rifle barrel, said choke comprising a tubular element screwed to the extremity of the rifle barrel and having longitudinal slots spaced at equal distances from one another and also having a median part with a longitudinal truncated cross section, a release tooth carried by said tubular element, a slidable external sleeve having a plurality of notches in its terminal part, said release tooth engaging said notches to determine the extent of back sliding of said sleeve, and a coil spring engaging said sleeve and causing the back sliding of said sleeve, said back sliding causing a reduction of the diameter of said tubular element, said release tooth operating by the recoil of the barrel at each discharge.

3,867,779

HOOK SETTING APPARATUS

Emery D. McMaster, 1309 Highland Dr., Petoskey, Mich. 49770

Filed Nov. 5, 1973, Ser. No. 412,686
Int. Cl. A01k 97/00
U.S. Cl. 43—15 **5 Claims**



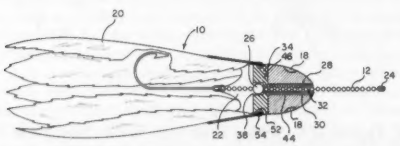
1. Apparatus for setting a fish hook on the fishing line of a fishing rod which rod includes a handle and a series of eyelets mounted along the rod for supporting and guiding the fishing line and including an eyelet at the distal end of the rod, an eyelet proximate to said distal end eyelet and an eyelet proximate the handle, said apparatus being independent of the support for said rod and comprising a flexible line, means on one end of said flexible line for detachably connecting said flexible line to said eyelet proximate the handle, and means on the other end of said flexible line for releasably engaging said

eyelet proximate the distal end of the rod for holding the rod in a desired bowed condition and releasing said eyelet proximate the distal end of the rod in response to a predetermined pull on the fishing line, said last named means comprising a hook member connected to said other end of said flexible line and adapted to releasably hook into said eyelet proximate the distal end of the rod and an arm on said hook member having an outer end adapted to be disposed between said eyelet proximate to the distal end of the rod and said eyelet at the distal end of the rod and in spaced relation to the rod and adapted to have the portion of the fishing line intermediate the distal end eyelet and the eyelet proximate the distal end trained over it so that a predetermined pull on the fishing line moves the arm and the hook to unhook the latter from said eyelet proximate the distal end of the rod.

3,867,780
SLOW TROLL FISHING LURE
Charles H. Litzinger, 440 W. Caley Dr., Littleton, Colo. 80120
Filed Sept. 6, 1973, Ser. No. 394,921
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.5 **2 Claims**

1. In a fishing lure for slow travel through water having a general U-shape with one leg thereof longer than the other and both legs being arcuate along a radius of curvature in a longitudinal direction, line attaching means to the longer leg thereof and hook attaching means to the bight between said legs, the improvement in which said legs are laterally arcuate along their length, each said leg having approximately the same lateral radius of curvature to provide an approximately parallel lateral extent of said legs and wherein said lateral radius of curvature of said legs to the width of said legs is in a ratio of from 0.6–1.0 providing a high side to side action of said lure at slow travel.

3,867,781
TROLLING FEATHER
Henry S. Wolfe, Beaver Hill Bldg. (South), Jenkintown, Pa. 19046
Filed Jan. 18, 1973, Ser. No. 324,565
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.09 **8 Claims**



1. In a trolling feather construction including a hook which is attached to a fishing line for trolling through water, the combination of

A. flexible means connected to the hook to permit substantially unrestricted movement of the trolling feather through water,

1. said flexible means haaving a first end and a second end,
2. said first end affixing to the hook,
3. said second end affixing to the fishing line;

B. catch means medially carried by the flexible means to serve as a stop,

1. said catch means having a cross-sectional configuration which is larger than the cross-sectional configuration of the flexible means;

C. a weighted head removably associated with the said flexible means,

1. said head being provided with a first axial bore,
2. a portion of the flexible means being insertable forwardly into the first axial bore,
3. the catch means limiting the forward travel of the flexible means relative to the head;

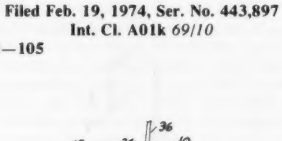
D. head stop means removably associated with the flexible means to maintain the head in a predetermined position;

1. said head stop means including a head stop which has a second axial bore,
2. the said flexible means inserting through the second axial bore,
3. the said head stop means having axial motion relative to the flexible means,
4. the head stop including a radially extending flange;

E. and colored feathers attached to the head stop at the flange thereof,

1. said colored feathers extending rearwardly and covering the said hook.

3,867,782
CRAB TRAP
Nilson V. Ortiz, 1064 S. Vanness Ave. Apt. 4, San Francisco, Calif. 94110
Filed Feb. 19, 1974, Ser. No. 443,897
Int. Cl. A01k *69/10*
U.S. Cl. 43—105 **2 Claims**



1. A crab trap, comprising:

a right rectangular open wire frame having a section of wire mesh secured to its bottom and top for forming a bottom panel and a top panel in vertically spaced relation;

an endless wall secured at its depending limit to the perimeter of said bottom panel and terminating at its upper limit intermediate the height of said frame for forming an enclosure within said frame,

said endless wall being inclined inwardly and upwardly from said bottom panel for forming a ramp permitting entry of crabs to the enclosure;

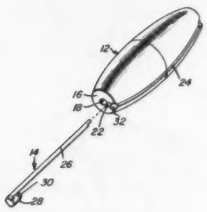
side and end wall wire mesh panels hingedly connected respectively to the respective marginal side and end of said bottom panel; and,

a flexible hoist strand connected, at one end, with each side and end panel, respectively, and extending at its other end portion through the central portion of said top panel.

3,867,783
QUICK CHANGE FISHING FLOAT

Roger J. Simpson, P.O. Box 1078, Merritt Island, Fla. 32952

Filed Sept. 13, 1973, Ser. No. 396,693
Int. Cl. A01k 97/02
U.S. Cl. 43—44.91 4 Claims

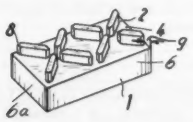


1. A float comprising a buoyant body, a line passage through said body for free sliding movement of the float on a passage received line, a line retaining member selectively received within one end of said line passage in wedged relation to said line passage and a passage received line to preclude movement of the float relative to a passage received line, a pin bore within said body parallel and adjacent to said line passage, and an elongated pin slidably and rotatably received within said pin passage, said line retaining member comprising a lateral projection on said pin selectively insertable within said one end of the line passage upon a rotation of the pin to align the projection with said one end of the line passage and an inward sliding of the pin into the pin passage and the projection into said one end.

3,867,784
TOY BRICK AND COMBINATION OF TOY BRICKS

Helmut Lange, Bez. Hamburg 1, Industrie-str. 5, 2 Schenefeld, Germany

Filed Oct. 9, 1973, Ser. No. 404,763
Claims priority, application Germany, Oct. 7, 1972, 368548
Int. Cl. A63h 33/08
U.S. Cl. 46—25 12 Claims

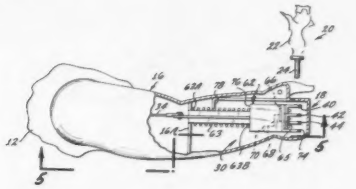


1. A toy brick comprising a box-shaped part with side and end walls and with a top wall while being open at the bottom, and a plurality of elastically deformable holding means connected to the outside of said top wall in a symmetrically paired arrangement, at least some of said holding means being fin-shaped, said fin-shaped holding means being arranged crosswise with regard to each other with a gap between each two holding means facing each other with their adjacent ends, one end of two holding means in crosswise arrangement respectively pointing to two adjacent corners of said box-shaped part.

3,867,785
OBJECT IDENTIFYING DOLL

John W. Ryan, Los Angeles; Melvin R. Kennedy, Harbor City, and James E. Marshall, Santa Ana, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 26, 1973, Ser. No. 335,852
Int. Cl. A63h 5/00
U.S. Cl. 46—117 3 Claims



3. In a toy, the combination comprising:

housing means including a wall having an aperture provided therein;

a carrier mechanism slidably mounted in said housing means, said carrier mechanism including first wall means; a plurality of elements mounted in said carrier mechanism, each of said elements having a stop provided thereon and an opening provided therein;

means normally biasing said first wall means into engagement with said stops for urging each of said elements to a position where its opening is aligned with said aperture; animating means for producing a plurality of output animations corresponding to different objects;

cable means connecting said animating means to said carrier mechanism for conditioning said animating means to produce a different output animation for each of several positions of said carrier mechanism;

a plurality of objects each having a post different in length from any other said posts, each of said posts being insertable in said aperture and being adapted to pass through one or more of said openings, depending upon the length of the particular post inserted into said aperture, whereby each post will block movement, relative to said housing wall, of any said element having an opening through which a post passes; and

second wall means provided on said carrier mechanism for engaging said stops on said elements, said second wall means and said stops on said elements being constructed and arranged relative to each other so that said carrier mechanism will be stopped at a different predetermined position for each blocked element.

3,867,786
MAGNETICALLY-CONTROLLED ANIMATED TOY

Abe Greenblatt, Dallas, Tex., assignor to Peter Tseng, Monterey Park, Calif.

Filed Sept. 27, 1973, Ser. No. 401,135
Int. Cl. A63h 29/22
U.S. Cl. 46—236 6 Claims

1. In combination with an animated dog-toy adapted to be energized by an electric battery-operated motor through an electrical circuit, the invention comprising:

a magnetic reed switch, incorporated into the nose/mouth area of said dog-toy, for controlling the energization of said dog-toy by said motor coupled to ground engaging wheels;

a permanent magnet incorporated into a dog bone, for activating said magnetic switch when said dog bone is manually placed in close proximity with said nose/mouth area of said dog-toy;

means for causing the magnetic field of said permanent magnet in said bone to close said magnetic switch in said dog-toy, to complete an electrical circuit to said battery/-

motor, to permit energization of said dog-toy by said motor;

a pair of spherical eye sockets fixedly mounted within said dog-toy;

an eyeball having a pupil thereon, said eyeball being freely disposed within said spherical eye socket, said eye socket having an inner diameter larger than the outer diameter

of said eyeball, whereby space therebetween is provided; said eyeball having at least one pupil secured thereto;

a permanent magnet positioned within said eyeball; and

a support liquid disposed in said space between said eyeball and said eye socket, whereby said eyeball is allowed to freely rotate within said spherical eye socket in a floating relationship thereto.

3,867,787

HOOP TOY

Siegfried Weinger, 11 Vernon Ct., Woodbridge, Conn. 06525

Filed July 25, 1973, Ser. No. 382,478

Int. Cl. A63h *11/10*

U.S. Cl. 46—100 **5 Claims**

1. A hoop toy including:

a hoop member having a modified I-beam shape in crosssection with an outer flange, an inner flange and a web connecting said flanges, said inner flange being narrower than said outer flange and said flanges defining a track therebetween;

carriage means mounted for rolling movement about said hoop, said carriage means including a U-shaped member with the closed end thereof bridging said inner flange and the sides thereof extending past said inner flange toward said outer flange;

a pair of wheels at each side of said connecting web between the ends of said carriage, said wheels being in rolling contact with the inner surface of said outer flange;

a pair of support struts extending from said carriage means within said hoop; and

figure means mounted on said support struts.

3,867,788

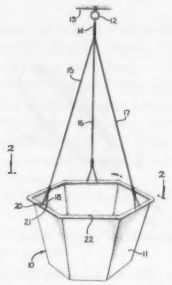
PLANT CARRIER

Richard C. Mickelson, 623 F. West Stoeker, Los Angeles, Calif. 91202

Filed May 29, 1973, Ser. No. 364,673

Int. Cl. A47g *7/00*

U.S. Cl. 47—35 **2 Claims**



1. A plant carrier for holding a growing plant and its supporting soil comprising:

an enclosure having a flat bottom and an integral sidewall projecting upward and outward from the peripheral edge of said bottom;

said sidewall terminating at its free end in a reverse curled lip having a rounded peripheral edge defining a central opening leading into the interior of said enclosure;

said sidewall further having a predetermined geometric shape in horizontal cross section;

reinforcement means integrally formed in said bottom so as to radiate outwardly to said sidewall for rigidizing said enclosure;

attachment means for said enclosure comprising at least three pairs of openings arranged in fixed spaced apart relationship about said lip and a hanging wire system comprising at least three wires having loops trained through said holes for hanging said enclosure in a hanging mode of utilization;

said attachment means is disposed within the inner curve of said reverse curled lip comprising a stiffening rib extending transversely across said lip and further being disposed between each pair of said attachment means openings;

a plurality of stand-offs integrally formed in said bottom for supporting said enclosure in a standing mode of utilization;

a drainage means for said enclosure comprising a plurality of bottom portions of reduced thickness adapted to be severed from said bottom to leave a plurality of drainage holes therein.

3,867,789

SELF-LOCKING FLORIST PLANTER

Benjamin D. Jacobson, c/o Craftsman Products Co., 13 E. Worcester St., Worcester, Mass.

Filed Mar. 5, 1973, Ser. No. 338,346

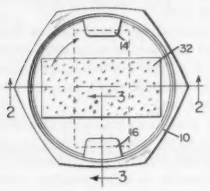
Int. Cl. A01b *5/00;* **A47g** *7/00*

U.S. Cl. 47—41.12 **1 Claim**

1. The combination of a florists' planter including a bottom and side walls with a block of water-absorbing cellular flower stem holding material,

including a horizontal material slicing fin on a side wall of the planter, the fin being integral with the side wall of the planter, and extending only part way into the planter above the bottom thereof, leaving a void in a vertical direction in the planter into which void the block of cellular material may be freely inserted to rest on the bottom of the planter, the block being of a size to enter the void,

whereby a twist of the block on a vertical axis may cause the fin to slice into the block and become lodged therein,



the block of cellular material having a thickness greater than the height of the fin above the bottom of the planter.

3,867,790

STAY ARRANGEMENT FOR A WINDOW OR DOOR OF THE TURN-AND-TILT TYPE

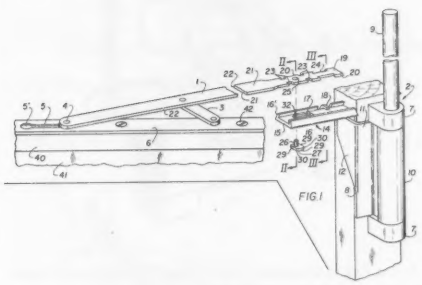
Wilhelm Frank, Leinfelden, Germany, assignor to Frank Wilh. GmbH, Leinfelden, Germany

Filed Dec. 14, 1973, Ser. No. 424,908

Claims priority, application Germany, Dec. 20, 1972, 2262341

Int. Cl. E05d *15/04*

U.S. Cl. 49—381 **9 Claims**



1. A stay arrangement for a window or door panel pivotally movable relative to an associated frame comprising:

a. a pivot assembly having a stationary part adapted to be attached to said frame, and a movable part connected to said stationary part for relative movement about an axis;

b. a connector member fixedly attached to said movable part and elongated radially relative to said axis, said connector member being channel-shaped and having a web portion and two flange portions sloping away from said web portion at respective acute angles and toward each other;

c. an elongated arm member, one longitudinally terminal portion of said arm member being received in said connector member in conforming, longitudinally slidable engagement with said web and flange portions;

d. securing means for securing the other longitudinally terminal portion of said arm member to said panel; and

e. limiting means for limiting relative longitudinal movement of said arm member in said connector member.

3,867,791

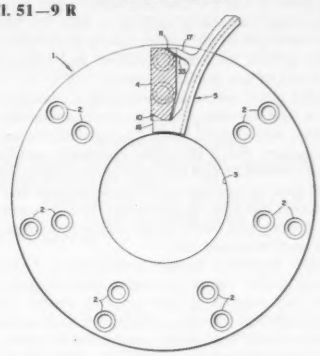
ABRASIVE BLASTING MACHINE

James R. Goff, 6601 Shawnee Dr., Oklahoma City, Okla. 73116

Filed May 13, 1974, Ser. No. 469,567

Int. Cl. B24c *5/06*

U.S. Cl. 51—9 R **10 Claims**



1. In a rotatable centrifugal abrasive blasting device comprising a driven wheel; a plurality of circumferentially spaced radially extending blades mounted on said wheel, said blades having inner and outer ends and front and rear surfaces; said inner ends of said blades defining a central opening; a hollow, vaned, driven impeller mounted in said central opening rotatable with said wheel; a stationary control cage around said impeller, said control cage having an opening therein for the passage of abrasive material from said impeller onto said blades; and means for feeding particulate, abrasive material to said impeller; the improvement wherein said blades are mounted on said wheel by means of blade blocks on said wheel; said blade blocks having inner and outer ends; each of said blade blocks having a first groove proximate its inner end and a second groove proximate its outer end; each of said blades having a first lug on its inner, rear surface for insertion in said first groove of said block, and a second lug on the rear of each blade, said second lug intermediate the ends of the blade for insertion in said second groove of said block; and further wherein said impeller obstructs movement of said blades in a direction radially inward.

3,867,792

APPARATUS FOR BUFFING WORN TIRES

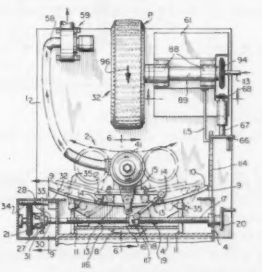
Guy Pelletier, Ville D'Anjou, Quebec, Canada, assignor to Rockland Industries Ltd., Quebec, Canada

Filed Apr. 16, 1973, Ser. No. 351,548

Claims priority, application Canada, May 8, 1972, 141613

Int. Cl. B29h *21/01*

U.S. Cl. 51—33 W **3 Claims**



1. Apparatus for buffing the tread portion of tires to be retreaded comprising: a frame, buffer guide means secured to

said frame and extending essentailly parallel to the axis of rotation of said tire, a carrier movable along said buffer guide means, a buffer assembly mounted to said carrier for moving therewith, a mounting structure adapted to support a tire whose tread is to be ground by said buffer assembly, and positioning means adapted to vary the distance between the axis of rotation of said tire and said buffer guide means along a line extending essentially radially of said tire thereby to determine the depth of the buffing taking place upon rotation of said tire around its axis of rotation and rotation of the grinding wheel of said buffer assembly,

said buffer guide means comprising as a principal component a rigid member forming an arcuate surface facing said tire, said arcuate surface being concave and having its imaginary chord extending essentially parallel to the axis of rotation of said tire, said carrier comprising guide rollers bearing against said arcuate surface and causing said buffer assembly to follow said arcuate surface when moved along said buffer guide means transversely of the tread portion of said tire,

said buffer assembly further comprising a buffer motor secured to said carrier, an output shaft rotatable by said motor and supporting said grinding wheel, and brake means operable to stop rotation of said output shaft, suction means operatively associated to said grinding wheel and adapted to aspirate the ground particles detached from said tire during buffing of its tread portion by said grinding wheel, said suction means comprising a dust collecting cover partly enclosing said grinding wheel, an aspirator and a vacuum tube coupling said dust collecting cover to said aspirator, and

said buffer motor being adapted to selectively rotate said grinding wheel in either direction, and wherein said dust collecting cover includes vane means pivoted within said dust collecting cover and adapted to prevent the escape of dust accepted through said vacuum tube, said vane means being pivotable between two extreme positions, each extreme position corresponding to a sense of rotation of said grinding wheel.

3,867,793

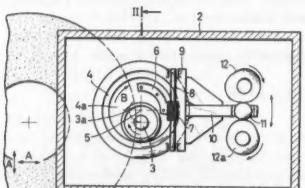
RELIEF GRINDING ATTACHMENT FOR SCREW TAP GRINDING MACHINES AND POLYGON GRINDING

Erwin Junker, Talstrasse 78, Nordrach/Baden, Germany

Continuation of Ser. No. 336,698, Feb. 28, 1973, abandoned. This application Nov. 8, 1973, Ser. No. 413,881

Int. Cl. B24b *3/22*

U.S. Cl. 51—97 R **9 Claims**



1. A relief grinding machine suitable for performing relief grinding and polygon grinding operations comprising:

grinding wheel means;

spindle shaft means displaceable toward and away from said grinding wheel means and adapted to carry a clamping chuck for holding a workpiece;

control lever means comprising:

means rotatable about a central axis, and

lever arm means rigidly connected to said rotatable means;

means mounting said spindle shaft means relative to said control lever means such that the longitudinal axis of said spindle shaft means is disposed eccentrically relative to said central axis;

means for transmitting rotary motion between said control lever means and said spindle shaft mounting means such that rotation of said control lever means produces movement of said spindle shaft axis relative to said grinding wheel means; and

a plurality of lead cams engaging the free end of said lever arm means such that movement of the cams produces rotation of said control lever means to move said spindle shaft axis relative to said grinding wheel means;

said spindle shaft mounting means being selectively shiftable relative to said control lever means for changing the location of the longitudinal axis of said spindle shaft means relative to said central axis independently of rotation of said lever arm means so as to concurrently change the position of said spindle shaft means relative to said grinding wheel means for a given orientation of said lever arm means.

3,867,794

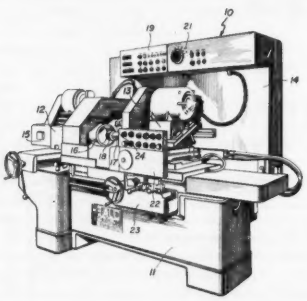
GRINDING MACHINE

Edward G. Robillard, Cherry Valley, Mass., assignor to Cincinnati Milacron-Heald Corporation, Worcester, Mass.

Filed Mar. 8, 1974, Ser. No. 449,224

Int. Cl. B24b *49/16*

U.S. Cl. 51—165.77 **10 Claims**



1. A grinding machine for the finishing of a surface of revolution on a workpiece, comprising

a. a base,

b. a workhead mounted on the base for supporting the workpiece,

c. a wheelhead mounted on the base for carrying a spindle with an abrasive wheel,

d. a dressing apparatus,

e. control means bringing about relative movement between the wheelhead and workhead longitudinally and transversely of the axis of the said surface of revolution to produce a grinding cycle between the wheel and the workpiece, the cycle consisting of a rough grind, a dress, and a finish grind,

f. means connected to the control means to determine a point of termination of the rough grind when the surface reaches a predetermined size, and

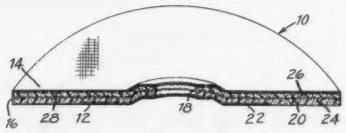
g. means measuring the distance from a predetermined point to the point of termination of the rough grind, backing the wheel that same distance for the dressing operation, and later returning the wheel that same distance minus a preset distance, so that the finish grind can start without loss of time and without striking the workpiece prematurely.

3,867,795

COMPOSITE RESINOID BONDED ABRASIVE WHEELS

William C. Howard, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Oct. 16, 1973, Ser. No. 406,918
Int. Cl. B24d *7/04*
U.S. Cl. 51—209 R **9 Claims**



1. A reinforced resin bonded abrasive grinding wheel of predetermined thickness having a relatively narrow peripheral grinding face usually presented and worn at an angle during grinding, extending between a top and a bottom side, reinforcing material bonded thereto and means for mounting the wheel for rotstion about its axis, wherein the improvement comprises:

a primary abrading portion extending along the bottom side to the peripheral grinding face and occupying a portion of the predetermined thickness of the wheel, and having resin bonded primary abrasive particles of co-fused alumina-zirconia abrasive material containing from 10% to 60% by weight of zirconia; and

a secondary abrading portion bonded to and extending from the primary abrading portion to the top side and peripheral grinding face of the wheel and having

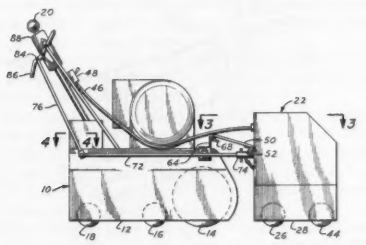
resin bonded secondary abrasive particles of a secondary abrasive material which differs from and of less durability than the alumina-zirconia abrasive material.

3,867,796

PROPELLING MEANS FOR FLOOR FINISHING MACHINES

Darwin D. Sonnenberg, Route 1, Hamler, Ohio 43524

Filed Feb. 25, 1974, Ser. No. 445,552
Int. Cl. B24b *23/00*
U.S. Cl. 51—176 **7 Claims**



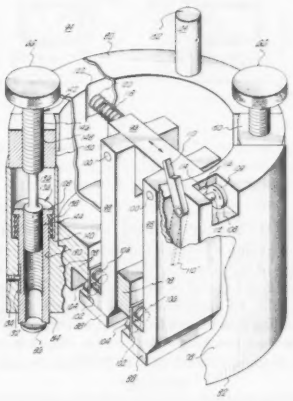
1. A power driving unit for a floor sander of the type having a pair of coaxial non-swivetable main support wheels and a swivetable support wheel spaced longitudinally thereof, said power driving unit comprising: a chassis, a pair of coaxial non-swivetable main floor engaging wheels for said chassis, a swivetale support wheel for said chassis spaced longitudinally of its main wheels, a motor on said chassis, drive means connecting said motor with one of said main support wheels of said unit, a draw frame, first hinge means connecting said draw frame to said chassis, second hinge means for connecting said draw frame to the floor sander, said hinge means being constructed and arranged to prevent turning motion between said driving unit and the floor sander but to permit vertical rocking action of the driving unit relative to the floor sander, a lever fastened to said chassis in a position to extend rearwardly externally of one side of the sander, and means adapted to be secured to the rear of the sander for raising or lowering said lever to lift the weight of said driving unit off of its drive wheels and onto its swivetable support wheel, and whereby the sander is automatically held in a straight line by the driving unit when the lever is moved to bring the power unit into its driving condition and the sander and power unit can be pivoted about the main support wheels of the sander when the lever is moved to bring the driving unit into its non-driving condition.

3,867,797

LAPPING FIXTURE

Markus B. Meier, Newbury Park, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 3, 1973, Ser. No. 421,327
Int. Cl. B24b *37/04*
U.S. Cl. 51—216 A **23 Claims**



1. In a lapping fixture for holding a workpiece to be lapped, the lapping fixture being adapted for urging a workpiece against a substantially flat lapping surface for grinding away portions of the workpiece extending beyond a lapping plane associated with the lapping fixture and polishing portions of the workpiece lying substantially in the lapping plane, the combination which comprises:

a. spacing means having a substantially flat contact surface adapted to be urged against the lapping surface, the contact surface defining the lapping plane;

b. a fixture body mounted to said spacing means at a fixed angular orientation with respect to the lapping plane;

c. means for holding a plurality of workpieces along a line of disposition substantially parallel to an axis of rotation for said holding means; and

d. means for rotatably mounting said holding means to said fixture body.

3,867,798

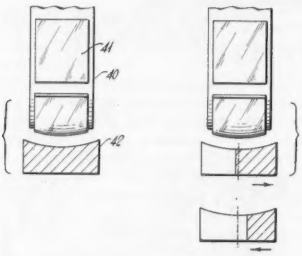
METHOD OF PRODUCING VARIABLE PROFILE BI-FOCAL LENS

Alan A. Masucci, 1230 Leland Ave., Bronx, N.Y. 10472

Filed May 15, 1973, Ser. No. 360,463
Int. Cl. B24b *13/02*
U.S. Cl. 51—284 **5 Claims**

1. In a system for producing bi-focal lens of constant optical centering from semi-finished blanks having reading and distance portions separated by a dividing line, the method comprising,

a. the pre-selection of one or more diopter series having pre-determined distances,
b. establishing a pair of equal terminal lines from a central point equal to said diopter distance to finite positions above and below said dividing line representing the optical centering of the lens,
c. developing a plurality of radii from each of said terminal lines to each of the distance and reading portions, each of said radii being comparable to the prescriptive powers of the respective distance and reading portions of the lens,
d. placing each of a plurality of lens blanks of each series on a lens blocking wheel whose radius is comparable to the radius of curvature of the distance portion of said bi-focals in one direction,



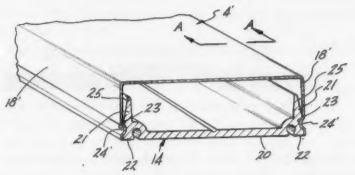
e. grinding the lens on said wheel with a first shiftable grinding tool having a preselected radius of curvature to effect grinding of the lens according to selected distance optical powers, and capable of being shifted in a direction equal to the selected variation of said distance optic powers,
f. de-blocking lens blanks from said wheel and placing same on a second blocking wheel whose radius is comparable to the reading portion of said bi-focals in one direction, and
g. subjecting said wheel to the grinding action of a second partially sectioned grinding tool having a radius of curvature in another direction to said blocking wheel and disposed to being shifted in a direction equal to the variations of reading optic powers, the completed blanks of each selective series having constant optical centering for the minimization of vertical imbalance.

3,867,799
ARCHITECTURAL PRODUCTS FORMED OF GLASS OR CERAMIC-TO-METAL COMPOSITES

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 254,666, May 18, 1972, , which is a continuation-in-part of Ser. Nos. 78,899, Oct. 7, 1970, Pat. No. 3,676,292, and Ser. No. 231,834, March 6, 1972, Pat. No. 3,826,627. This application Feb. 11, 1974, Ser. No. 440,982
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 **16 Claims**

1. In a building curtain wall comprising a plurality of substantilly vertically and horizontally disposed structural members affixed to the outside of a building, a plurality of decorative panels and windows supported by said structural members, a plurality of retaining members secured to said structural members for retaining said panels and said windows in place and a plurality of facing members covering said retaining members and being supported by said retaining members, the improvement wherein said facing members are formed of a glass or ceramic-to-metal composite comprising a glass or

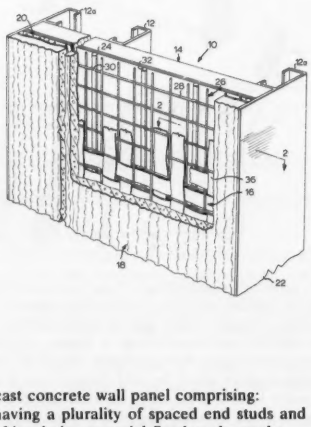


ceramic component bonded to a copper base alloy component comprising from about 2 to about 12% aluminum and the balance essentially copper, said copper base alloy component adapted to contact said retaining members.

3,867,800
PRECAST RAIN-SCREEN WALL

Robert Gordon Elliott, Rexdale, Ontario, Canada, assignor to Gazelle Systems Ltd., Weston, Ontario, Canada

Filed Jan. 22, 1973, Ser. No. 325,935
Int. Cl. E04b *2/28, 2/14*
U.S. Cl. 52—347 **7 Claims**



1. A precast concrete wall panel comprising:
a panel having a plurality of spaced end studs and a rigid sheet of insulating material fixed to the studs;
a rigid screen located on that side of the sheet of insulating material opposite the studs, said screen comprising a grid of intersecting strands, a web of flexible material interengaging the strands, vertically oriented laterally spaced means fixed to the screen and bearing against the sheet of

insulating material whereby the screen is spaced from the sheet of insulating material and parallel thereto and providing an air space between the grid and the rigid sheet of insulating material, and means fixing the screen to the sheet of insulating material, and to the studs and

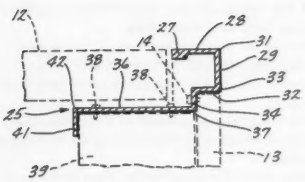
a concrete facing overlying the screen remote from the sheet of insulating material and bonded to the grid of intersecting strands.

3,867,801

EXTRUDED ALUMINUM DOOR FRAME

Duane A. Hoefling, 8708 Carole Circle, Des Moines, Iowa 50310

Filed Feb. 25, 1974, Ser. No. 445,077
Int. Cl. E04c *2/38*
U.S. Cl. 52—475 **7 Claims**



1. A vending machine door comprising:

a first extruded aluminum elongated member;

a second extruded aluminum elongated member having one end thereof secured to one end of said first extruded aluminum elongated member;

a third extruded aluminum elongated member having one end thereof secured to the other end of said second extruded elongated member;

a fourth extruded aluminum elongated member having one end thereof secured to the other end of said third extruded aluminum elongated member, and the other end of said fourth extruded aluminum elongated member being secured to the other end of said first extruded aluminum elongated member;

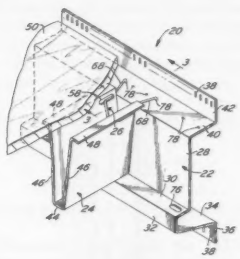
said first, second, third and fourth extruded aluminum elongated members having an identical shape in cross-section, said cross-sectional shape comprising an outer perimeter wall portion having a substantially thickened reinforcement portion on the rear side thereof, a front wall portion connected at one side to the front side of the outer perimeter wall portion and extending at a right angle thereto, a first rearwardly extending wall portion connected to the other side of said front wall portion at a right angle thereto, a first inwardly extending wall portion connected at one side to the other side of said first rearwardly extending wall portion, a second rearwardly extending wall portion connected at one side to the other side of said first inwardly extending wall portion and a second inwardly extending wall portion connected at one side to the other side of said second rearwardly extending wall portion.

3,867,802

FLOOR SUPPORT ASSEMBLY FOR BUILDING STRUCTURES

Wesley T. Murphy, Auburn, N.Y., assignor to Vercon Products, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 160,018, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 85,533, Oct. 30, 1970, abandoned. This application Mar. 9, 1973, Ser. No. 339,796
Int. Cl. E04b *5/52*; **E04c** *2/42*
U.S. Cl. 52—483 **10 Claims**



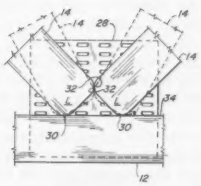
1. In a floor structure including a floor panel floor support assembly comprising a beam having an opening therein and including a first ledge, an elongated floor joist adapted for supporting said floor panel directly thereon and including a bottom wall and a pair of side walls, a portion of said bottom wall being disposed upon and supported by said first ledge and detachable, resilient locking clip means located between said floor joist and said beam and including an end portion snap fit into said opening for connecting said floor joist to said beam and for locking said floor joist in place with respect to said beam.

3,867,803

FLAT JOIST TRUSS WITH ROUNDED LOAD-TRANSFER SURFACES

Bruce W. Platt, Littleton, Colo., assignor to Richardson Lumber Company, Denver, Colo.

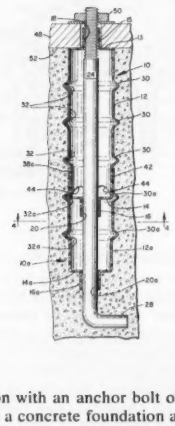
Filed Sept. 27, 1973, Ser. No. 401,186
Int. Cl. E04c *3/12*
U.S. Cl. 52—693 **4 Claims**



1. A plate-connected flat joist truss which comprises: a first elongate timber defining a lower chord member with an upwardly-facing planar bearing surface; a second elongate timber defining an upper chord member with a downwardly-facing planar bearing surface; a plurality of relatively shorter web-forming timbers arranged in end-to-end oppositely-inclining relation between the upper and lower chord members cooperating to define a zigzag strut subassembly, said webs each having the surfaces on both ends thereof in contact with one another and with opposed bearing surfaces of the chord members rounded to establish essentially line contact therewith irrespective of the resultant angle of inclination each assumes within the strut subassembly; and, a pair of

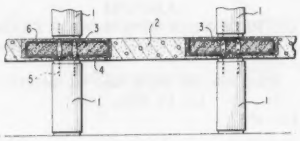
plates fastened on opposite sides of each joint thus formed effective to maintain same in assembled relation.

3,867,804
ANCHOR BOLT FORM
Herbert S. Wilson, 86 Woolson St., Watertown, Conn. 06795
Filed June 8, 1973, Ser. No. 368,254
Int. Cl. E04b *1/41*; **E04c** *5/12*; **E04b** *5/12*
U.S. Cl. 52—699 **1 Claim**



1. In combination with an anchor bolt of the type adapted to be embedded in a concrete foundation and having a shank of substantially uniform diameter throughout its length including a head at its lower end and a threaded portion at its upper end for securing machinery and the like in position on the concrete foundation a plurality of forms, each of said forms comprising an axially elongated hollow shell of severable plastic material including an integral axially elongated sleeve portion having a plurality of generally cylindrical sections including a lower end section and a plurality of upper sections, said lower end section having an outside diameter substantially equal to the inside diameter of each of said upper sections, said sleeve including a plurality of axially spaced coaxial annular ribs, each of said ribs being disposed intermediate an associated one and another of said sections, each of said ribs projecting radially outwardly beyond said sections, said sleeve portion having upper and lower end walls, said shell having coaxial upper and lower neck portions, each of said neck portions extending axially outwardly from an associated one of said end walls and having a coaxial bore therethrough communicating with the interior of said shell, said lower neck portion having a diameter substantially equal to the diameter of said bolt, said shell having thread engaging means on said upper neck portion for coacting with the threaded upper end portion of said bolt to permit axial adjustment of said shell relative to said bolt upon relative rotation therebetween, one of said forms receiving said bolt therethrough and having its thread engaging means in engagement with said threaded upper end portion and its lower neck portion in surrounding engagement with an associated portion of said shank, another of said forms having an upper portion severed therefrom below said upper end wall thereof and receiving said bolt therethrough, said other form having at least a portion of one of said upper sections thereof in surrounding engagement with said lower section of said one form and having its lower neck portion in surrounding engagement with an associated portion of said shank below said one form whereby to extend the effective operative length of said one form relative to said bolt.

3,867,805
METHOD OF FORMING JOINT CONSTRUCTION OF PRECAST CONCRETE COLUMNS AND BEAMS
Yuzo Mikami, Tokyo; Hideyuki Kobayashi, Saitama, and Tetsuya Sasaki, Tokyo, all of Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1973, Ser. No. 361,758
Claims priority, application Japan, May 18, 1972, 47-49467
Int. Cl. E04b *1/04*
U.S. Cl. 52—744 **2 Claims**

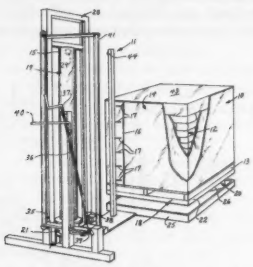


1. A method of constructing rigid structural joints between precast concrete columns and beams by utilizing splice sleeves of almost the same depth as the beams, said method comprising the steps of:
a. vertically positioning a lower column having reinforcing bars extending from the upper end thereof;
b. positioning a sleeve on the lower column in such a fashion that the opposed open ends thereof align with the reinforcing bars of the columns;
c. inserting the reinforcing bars in the sleeve;
d. positioning the end portion of a first beam formed with a groove which is U-shaped in cross section on the lower column;
e. positioning the end portion of a second beam formed with a groove which is U-shaped in cross section on the lower column;
f. placing a set of pre-assembled bars in the space formed by the two grooves in the first and second beams; then
g. placing an upper column having reinforcing bars extending from the lower end thereof on the lower column in a fashion such that the reinforcing bars extending from the lower end thereof are inserted within the sleeve; then
h. filling the interior of the sleeve with a grouting material to lock the reinforcing bars from the upper and lower columns to each other; and
i. filling the space formed by the two grooves and extending across the ends of both columns with concrete in order to make the columns and beams monolithic.

3,867,806
PROCESS OF MAKING A STRETCHED-WRAPPED PACKAGE
Patrick R. Lancaster, III, and William G. Lancaster, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.
Filed Apr. 4, 1973, Ser. No. 347,873
Int. Cl. B65b *5/06*
U.S. Cl. 53—27 **10 Claims**

1. A process of making a unitary package, comprising the steps of:
a. placing a load on a support;
b. locating a rolled-up sheet of a stretchable material on dispenser means adjacent to said support;
c. withdrawing a leading edge of said material from said dispenser means and holding said leading edge against said load;
d. initiating substantially unrestricted relative movement between said support and said dispenser means to cause a sufficient amount of said material to be dispensed from said dispenser means to overwrap at least a part of said load;
e. subsequently continuing said relative movement but restricting it such that said material will then be stretched and causing a sufficient amount of said stretched material

to be dispensed from said dispenser means to provide a band comprising plural layers of said material around said load; and



f. fastening the trailing edge of said stretched material to at least one of the previously dispensed band-forming layers.

3,867,807

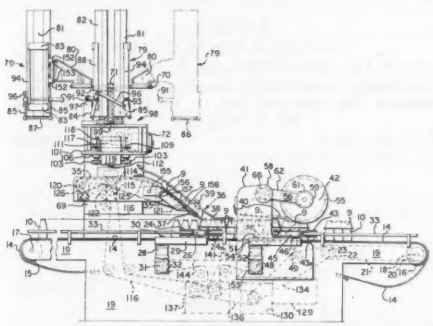
CARRIER APPLICATOR MACHINE FOR BOTTLES

Eugene F. Doucette, Burlington, Mass., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 19, 1973, Ser. No. 416,733

Int. Cl. B65b *21/00, 43/44*

U.S. Cl. 53—48 **7 Claims**



1. A machine adapted for applying a succession of molded shell-like carriers having a plurality of article receiving compartments formed therein to a procession of containers having necks and closures at the top end thereof to form carrying packs of the containers comprising, in combination

supply means supporting said carriers in a nested relation in a vertical stack,

separating and feeding means operable at the lower end of said stack for separating the lowermost carrier in succession and feeding it vertically below the stack,

carrier conveyor means below said separating and feeding means receiving said carriers and moving them horizontally to a preliminary assembly station spaced from said feeding means,

bottle conveyor means disposed beneath said conveyor means for directing a procession of containers to the preliminary assembly station,

means at the preliminary assembly station guiding the carriers serially over the top of the containers advancing by said last named means, said bottle conveyor means advancing the bottles and carriers horizontally to a final assembly station horizontally spaced from the preliminary assembly station, and

rotary assembly means mounted above said final assembly station for engagement with the top surface of said carriers,

said rotary assembly means comprising

a rotary applicator wheel mounted on an axle disposed horizontally and transversely to the movement of the containers, and

pockets in the peripheral surface of said wheel spaced around the circumference of said drum to correspond with the spacing of the tops of the compartments of said carriers, said pockets being shaped to receive a compartment top therewithin, and support means for the applicator wheel, including

a pivotal mounting arm, a pivotal connection at one end of said arm on the frame of the machine and a pivotal mounting at the other end of said arm for the applicator wheel axle, the support means permitting the applicator wheel to engage the containers at the final assembly station and relatively press the compartments and container tops into locking engagement, whereby each carrier compartment encircles a container neck and the carrier embraces the group of containers.

3,867,808

FORAGE HARVESTERS

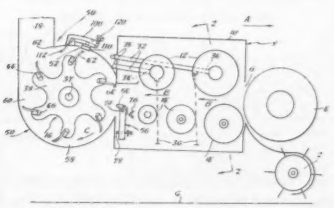
Archibald Watson Kidd, Seend Close, Seend, Melksham, England

Filed Apr. 20, 1973, Ser. No. 352,979

Claims priority, application Great Britain, Apr. 25, 1972, 19238/72

Int. Cl. A01d *47/00*

U.S. Cl. 56—14.1 **10 Claims**



1. A forage harvester having means for picking up a crop, a feed roller assembly for comprssing the crop, and a cutting rotor for chopping up the compressed crop, the feed roller assembly comprising at least one rotatable shaft, a roller mounted fast on one end portion of said shaft with and elongate portion of said shaft projecting therefrom, said elongate portion being longer than the axial length of said roller, means for driving said shaft, and a pivotal coupling between said driving means and the end of said elongate portion of said shaft remote from the roller, said driving means being rotatably mounted to the harvester and the end of said shaft remote from said driving means being mounted for rise and fall movement so that the roller and shaft will swing together about said pivotal coupling.

3,867,809

DOUBLE TWIST WIRE STRANDING MACHINE WITH REMOVABLE CREEL ASSEMBLY

John Adams Holbrook, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

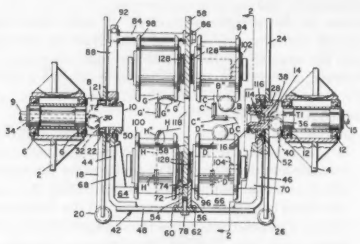
Filed Oct. 2, 1972, Ser. No. 294,303

Int. Cl. D07b *3/12;* **D01h** *7/86*

U.S. Cl. 57—58.52 **8 Claims**

8. In a double twist stranding machine, a pair of spaced axially aligned rotatable shafts having opposed cantilevered ends with passageways extending therethrough; flyer means carried on said shafts for rotation therewith, said flyer means having pulley means associated therewith; a U-shaped creel support hanging from said ends; a creel plate removably mounted on said creel support, said creel plate having means

mounted thereon for carrying a plurality of spools of wire, the arrangement of the aforesaid components being such that the



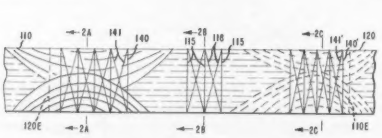
wire from said spools may be threaded through the passageway in one of said ends, thence over said pulley means, and thence through the passageway in the other of said ends.

3,867,810

SPLICED TOW AND PROCESS FOR MAKING SPLICED TOW

Jan Meertens, Dordrecht, and Antonius H. J. Merkx, Hank, both of Netherlands, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1974, Ser. No. 437,858
Int. Cl. B65h *69/06;* **D02j** *1/08;* **D02g** *3/22*
U.S. Cl. 57—142 **3 Claims**



1. In the process for joining tows to form a continuous tow by placing the end of a tow A over the end of a tow B so that the filaments of tow A rest on top of the filaments of tow B and interentangling filaments of tow A with filaments of tow B to form a splice, the improvement for forming a strong, compact tow-splice, wherein the improvement comprises forming a preliminary splice, stretching the assembly laterally from one edge adjacent to one side of the preliminary splice, folding this stretched portion of the assembly over toward its other edge to form an overlap at one side of the preliminary splice, interentangling filaments at this overlap, similarly folding the assembly near the other side of the preliminary splice to form a second overlap at the other side of the preliminary splice, and interentangling filaments at this second overlap.

3. Tow-spliced as defined in claim **1.**

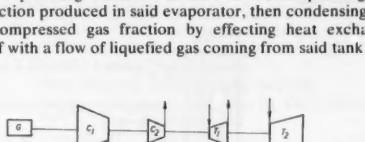
3,867,811

POWER MODULATION OF A THERMAL GENERATOR

Raymond Francois Maurice Waeselynck, Paris, France, assignor to Compagnie Francaise de Raffinage, Paris, France

Filed Nov. 14, 1972, Ser. No. 306,557
Claims priority, application France, Nov. 22, 1971, 71.41723
Int. Cl. F02c *9/14*
U.S. Cl. 60—39.03 **9 Claims**

1. A process for modulating the power of a gas turbine by variation of the inlet temperature of the working fluid in a compressor located upstream of the gas turbine, said process comprising forming the compression and turbine steps each in a plurality of stages, cooling the working fluid before at least the last compression stage by heat exchange with liquified gas stored in a tank, producing a further refrigeration of the liquified gas stored in said tank by supplying at least a part of the liquefied gas during off-peak hours from said tank to an evaporator wherefrom are obtained a gas fraction at the top and a cooled liquefied gas fraction at the bottom, compressing the gas fraction produced in said evaporator, then condensing the thus compressed gas fraction by effecting heat exchange thereof with a flow of liquefied gas coming from said tank and



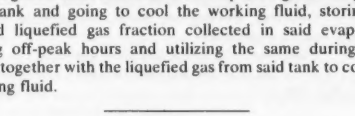
going to cool the working fluid and introducing the now condensed gas fraction into said flow of liquefied gas coming from said tank and going to cool the working fluid, storing the cooled liquefied gas fraction collected in said evaporator during off-peak hours and utilizing the same during peak hours together with the liquefied gas from said tank to cool the working fluid.

3,867,812

GAS MOTOR POWER SYSTEM

Thomas P. Van Arsdel, 5300 E. Rt. 29, Celina, Ohio 45822

Continuation-in-part of Ser. No. 252,364, May 11, 1972, abandoned. This application Feb. 16, 1973, Ser. No. 333,336
Int. Cl. F02g *3/00*
U.S. Cl. 60—39.15 **5 Claims**



1. A power system for providing controllable amounts of drive to a mechanical member, said system comprising in combination:

a pressurized source of air;

a source of fuel;

structure housing a combustion chamber for burning said fuel and said air therein to produce combustion products in the form of hot gas, said combustion chamber having a first inlet for said fuel, a second inlet for said air, and an outlet for said hot gas;

means coupling said fuel source and said air source to said first inlet and said second inlet of said combustion chamber for introducing said fuel and said air into said combustion chamber for the burning thereof;

fuel/air ignitor means mounted to said structure to produce burning of fuel and air mixture within said combustion chamber;

a storage means coupled to said outlet of said combustion chamber for storing under a first predetermined maximum pressure the hot gas combustion products produced by the burning of said fuel/air mixture, said storage tank having at least one outlet from which the hot gas stored therein may be controllably discharged;

regulator means being coupled to said storage means and responsive to the pressure within said storage means to terminate airflow from said pressurized source of air when pressure in said storage means exceeds said first predetermined pressure;

a first gas motor drivenly coupled to said one storage means outlet and adapted to be coupled to a mechanical member for driving the same, said gas motor being responsive to the hot gas controllably discharged from said storage means to provide controllable amounts of drive to first means coupled thereto;

valve means are interposed between said combustion chamber and storage means for permitting discharge of said hot gas into said storage means only upon the pressure produced in said combustion chamber being greater than a second predetermined pressure, said valve means includes an electrically operated valve to open and close said outlet of said combustion chamber, said valve means further includes a pressure sensor extending into said combustion chamber and being electrically connected to said electrically operated valve, said pressure sensor effects opening of said valve means when pressure within said combustion chamber is above said second predetermined pressure and effects closing of said valve means when pressure within said combustion chamber is below said second predetermined pressure;

termination means connected to said fuel pump operable to terminate fuel flow upon termination of airflow.

3,867,813

TURBOJET ENGINE FOR VERTICAL OR SHORT TAKE-FF AND LANDING AIRPLANES

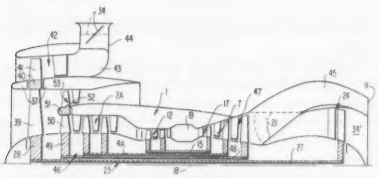
Heinrich Leibach, Grafrath-Wildenroth, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Oct. 5, 1972, Ser. No. 295,219

Claims priority, application Germany, Oct. 5, 1971, 2149619

Int. Cl. F02k *3/04*; **F02c** *3/06*

U.S. Cl. 60—225 **33 Claims**



1. A turbojet engine arrangement; especially for use with vertical or short take-off and landing airplanes of the type having jet deflector devices separate from the thrust nozzle of the basic engine for amplifying thrust and lift at least during take-off and landing of the airplane; said arrangement comprising: a basic turbojet engine for supplying an exhaust gas stream, a propulsive thrust nozzle arranged downstream of said exhaust gas stream, a first low-pressure turbine arranged downstream of said exhaust gas stream, a first low-pressure compressor drivingly connected to said low-pressure turbine by a first shaft, said first low-pressure compressor rotating coaxially with said first shaft, said first low-pressure compressor supplying a first low pressure air stream output in response to rotation of said low-pressure turbine, duct means for communicating at least a portion of said first low-pressure air-stream output to jet deflector devices, and exhaust gas stream control means for selectively communicating said exhaust gas stream with one of said first low-pressure turbine and said propulsive thrust nozzle,

wherein said basic engine includes a combustion chamber, basic engine compressor means for supplying compressed air to said combustion chamber and to a bypass duct extending in bypassing relationship to said combustion chamber and separate from said duct means, basic engine turbine means driven by an exhaust gas stream from said combustion chamber and drivingly connected by basic engine shaft means to said basic engine compressor means,

wherein said basic engine shaft means are coaxial with said first shaft,

and wherein said exhaust gas stream control means is arranged downstream of said basic engine turbine means and upstream of said first low-pressure turbine means such that said engine arrangement is operable with a relatively high bypass ratio for take-off and landing operations when said exhaust gas stream is communicated with said first low-pressure turbine means and is operable with a relatively low bypass ratio for cruise conditions when said exhaust gas stream is communicated with said propulsion thrust nozzle.

3,867,814

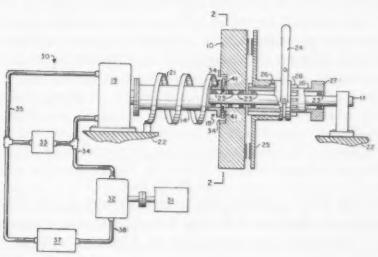
TORQUE ENERGY CONVERTER AND STORAGE DEVICE

Theodore S. Schneider, 2065 Hatch Rd., Novato, Calif. 94947

Filed Dec. 26, 1973, Ser. No. 428,226

Int. Cl. F15b *1/02*; **F03d** *1/00*

U.S. Cl. 60—413 **7 Claims**



1. A torque energy converter and storage device comprising a flywheel,

means for multiplying an input force comprising

an hydraulic pump adapted to receive an input force and apply said force to an hydraulic fluid,

an hydraulic motor adapted to exert a torsional force in proportion to the force of said hydraulic fluid, and

a conduit system fluidly interconnecting said hydraulic pump and said hydraulic motor,

means for storing said multiplied force, and

means for automatically applying forces stored in said means for storing said multiplied force to said flywheel upon reaching a predetermined level of multiplied force.

3,867,815

HEAT ENGINE

George M. Barrett, R.R. No. 5, Galt, Ontario, Canada

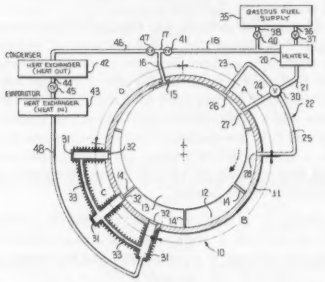
Continuation-in-part of Ser. No. 86,738, Nov. 4, 1970, Pat. No. 3,698,184. This application June 9, 1972, Ser. No. 261,232

Int. Cl. F01k *25/00*; **F25b** *27/00*

U.S. Cl. 60—682 **10 Claims**

1. A heat engine of the type including a housing defining a generally cylindrical chamber, a rotor mounted within said chamber in eccentric relation, and vanes carried by said rotor

in sliding sealing contact with said housing, said rotor being closest to said housing at one point in said chamber and most remote from said housing at a second point in said chamber, a working gas in said chamber, and in accordance with the Carnot cycle of operation said engine and said working gas having four gaseous conditions in sequence during rotation of said rotor as follows: A-isothermal expansion, B-reversible adiabatic expansion, C-isothermal compression and D-reversible adiabatic compression; the improvement residing in a by-pass passage coupled to said chamber on opposite sides of said one point and in the areas of gaseous conditions D and A, respectively, heater means for heating gases flowing



through said by-pass passage to provide said isothermal expansion, sealed external counterflow passage means connected to said chamber for receiving gases from said chamber compressed by the action of said rotor and returning such gases to said chamber in the area of lower pressure gaseous condition C, and cooling means coupled to said external flow passage means for providing said isothermal compression, and variable throttle means for varying said A-isothermal expansion to vary the output of said engine, said variable throttle means including means for varying the point in the area of gaseous condition A wherein the heated working gas is returned to said chamber.

3,867,816

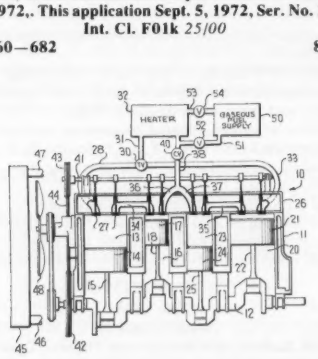
LOW POLLUTION RECIPROCATING HEAT ENGINE

George M. Barrett, R.R. No. 5, Galt, Ontario, Canada

Continuation-in-part of Ser. No. 86,738, Nov. 4, 1970, Pat. No. 3,698,184, and a continuation-in-part of Ser. No. 261,232, June 9, 1972,. This application Sept. 5, 1972, Ser. No. 286,351

Int. Cl. F01k *25/00*

U.S. Cl. 60—682 **8 Claims**



1. A heat engine operable generally in accordance with the Carnot cycle, said engine comprising a crankshaft, at least one large cylinder and one small cylinder each having a respective piston therein and connected to said crankshaft in out of phase relation, a closed system for recirculating a gas through said cylinders; said closed system including a heater, a check valve in advance of said heater, first flow means connecting said heater to said large cylinder, said first flow means including a throttle valve and flow controlling valve means of the positively actuated mechanical type, said closed system between said check valve and the interior of said large cylinder to a point during a work stroke of said piston of said large cylinder being means for effecting isothermal expansion of said gas, further work movement of said large cylinder piston being responsive to reversible adiabatic expansion of said gas, second flow means connecting said large cylinder to said small cylinder said second flow means including cooling means for cooling gas flowing from said large cylinder to said small cylinder and flow controlling valve means for effecting isothermal compression of said gas during the compression stroke of said large cylinder piston, and third flow means connecting said small cylinder to said heater, said third flow means including said check valve and providing for reversible adiabatic compression of said gas within said small cylinder during the compression stroke of the piston thereof.

3,867,817

OIL FENCE HAVING A LIMITED FLEXIBILITY

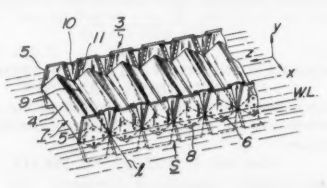
Kuninori Aramaki; Yasuharu Kawaguchi, both of Yokohama, and Hiroshi Kawakami, Kamakura, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed June 25, 1973, Ser. No. 373,222

Claims priority, application Japan, June 29, 1972, 47-64431

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **5 Claims**



1. An oil fence having a limited flexibility, said oil fence comprising:

a. a plurality of rigid floats arranged side by side in the longitudinal direction of the fence;

b. a rigid planar skirt attached to each end of each of said plurality of rigid floats along the longitudinal direction of the fence, said rigid planar skirts being dimensioned to leave a gap between each adjacent pair of said rigid planar skirts in the longitudinal direction of the fence;

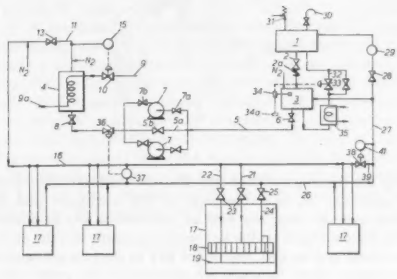
c. a flexible membrane attached to each adjacent pair of said rigid planar skirts to close the gap therebetween, whereby the rigid planar skirts and the flexible membranes attached to the rigid floats will form two continuous walls capable of inhibiting floating matter from moving thereacross; and

d. hinge means for pivotally connecting each pair of adjacent floats, said hinge means including means permitting relative rotational motion about the hinge axis but substantially preventing relative rotational motion about axes perpendicular to the hinge axis, whereby each pair of adjacent floats is swingable about an axis therebetween which is substantially perpendicular to the longitudinal direction of the fence, permitting the fence to follow any variation of the wave contour on the water surface, but the fence is restricted from flexing in the longitudinal direction of the fence.

3,867,818
METHOD AND APPARATUS FOR CRYOGENIC TANK WARM-UP

Edmund George Tornay, London, England, assignor to Conch International Methane Limited, Nassau, Bahamas

Filed Oct. 30, 1972, Ser. No. 301,847
Claims priority, application Great Britain, Nov. 17, 1971, 53481/71
Int. Cl. F17c *17/02*
U.S. Cl. 62—52 **7 Claims**



1. A method of quickly warming up an insulated liquid cryogenic storage container after removal of the liquid and while the container is still cold, comprising

a. providing a source of heat transfer medium which is in a liquid state at ambient temperature and which retains its liquid state at an appropriate working pressure over a temperature range from ambient to substantially the boiling point of the cryogenic liquid;

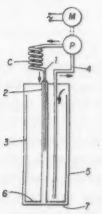
b. adding latent heat to the heat transfer medium whereby to vaporise said medium at an elevated pressure; and

c. feeding the vaporised medium at its elevated pressure into the storage container for indirect heat exchange with the cold interior of said container, said heat exchange causing the heat transfer medium to return to its liquid state substantially at said elevated pressure, said elevated pressure being adjusted such that it provides sufficient heat to assist in maintaining the flow of said medium through said storage container.

3,867,819
REFRIGERATION APPARATUS FOR COOLING A LIQUID

Jack Hartman; Joe W. Leard, both of Oklahoma City, and James L. Sharp, Tulsa, all of Okla., assignors to Porta-Kool, Inc., Tulsa, Okla.

Filed May 21, 1973, Ser. No. 362,372
Int. Cl. F25b *39/02*
U.S. Cl. 62—293 **5 Claims**

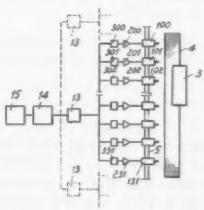


1. A device for effecting evaporation of compressed refrigerant input thereto consisting of a first tubing enclosure, a second concentric tubing enclosure rigidly affixed therein in closely spaced relationship and having the upper end open in communication with the interior of said first enclosure, hollow tubular means extending concentrically along the central axis of said second concentric tubing enclosure for releasing refrigerant under pressure between the lower closed ends of said first and second tubing enclosures and means for conducting the expanded refrigerant from the interior of said second tubing enclosure.

3,867,820
ELECTRONIC APPARATUS FOR CONTROLLING THE NEEDLES IN KNITTING MACHINES

Gino Zamarco, Somma Lombardo, and Gianni Colombo, Gavirate, both of Italy, assignors to Tesalon Anstalt, Vaduz, Liechtenstein

Filed July 6, 1972, Ser. No. 269,332
Claims priority, application Switzerland, July 9, 1971, 10112/71
Int. Cl. D04b *15/66, 7/24*
U.S. Cl. 66—154 A **1 Claim**



1. In a knitting machine having a needle bed and a plurality of jacks for operating the needles, a device for the selective control of the needles comprising an elongated support member arranged near said needle bed along substantially the whole length thereof and movable therealong, means for driving said support member, a number of electromagnets arranged on said support member and equally spaced from one another along the whole length thereof by an extent corresponding to that of a group of adjacent needles, a number of actuation members each arranged on said support member proximate to a corresponding electromagnet and each having one end for cooperation with the jacks of a group of adjacent needles, each of said actuation members being operated by a corresponding one of said electromagnets for selectively operating the jacks of a corresponding group of needles and cause the selected needles of said group to move from a non working position into a working position, said support member being reciprocatingly movable for an extent at least corresponding to the distance between two electromagnets thereby causing simultaneous selective operation of the jacks and the needles of each group of needles, the device further comprising an electronic programming unit for energizing said electromagnets according to the operative program during the movement of said elongated support member.

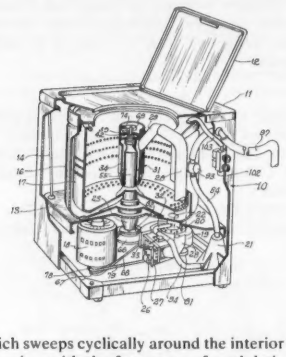
3,867,821
TRANSMISSIONLESS WASHING MACHINE WITH MODULATED RECIRCULATION

Mathew Hurwitz, 63 Oakland Ave., Auburdale, Mass. 02166

Filed July 13, 1973, Ser. No. 379,120
Int. Cl. D06f *17/04, 23/04*
U.S. Cl. 68—184 **7 Claims**

1. In a top-loading automatic clothes washing machine, in combination, a tub adapted to contain a body of liquid, a cylindrical basket within said tub, mechanically modulated nozzle having an inlet duct and an outlet orifice, said outlet orifice being disposed below the surface of the body of liquid when the same is contained in the tub, a recirculating pump connected to said tub and said inlet duct, means for driving said pump, means for cyclically modulating the geometry of

said orifice so as to direct into said body of liquid a flow of liquid which is spatially unsteady thereby creating in the body of liquid within said basket an unsymmetrical field of turbulence which sweeps cyclically around the interior of the basket in synchronism with the frequency of modulation of the nozzle.



3,867,822

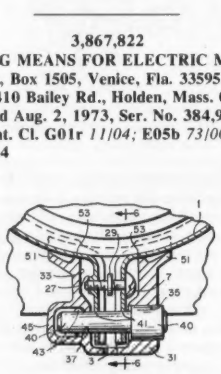
LOCKING MEANS FOR ELECTRIC METERS

Lynn H. Morse, Box 1505, Venice, Fla. 33595, and Anker J. Nielsen, Jr., 410 Bailey Rd., Holden, Mass. 01520

Filed Aug. 2, 1973, Ser. No. 384,920

Int. Cl. G01r *11/04;* **E05b** *73/00*

U.S. Cl. 70—164 **6 Claims**



1. Locking means for electric meters having in combination a base, a receptacle holding the meter works, a U-section split ring uniting the base and the receptacle, means on the ends of the split ring to contact the ring, unbreakable means shielding the contracting means from access, and key-operated means locking the shielding means to the split ring.

3,867,823

KEY CASE

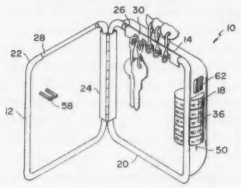
Napoleon Waltower, 12471 Grand River, Detroit, Mich. 48204

Filed Oct. 9, 1973, Ser. No. 404,168

Int. Cl. A47g *29/10*

U.S. Cl. 70—456 B **7 Claims**

1. A key case comprising an enclosure including a cover and a body, means for securing at least one key to the key case in alternative positions extending into or out of the enclosure, and a multiple-digit combination lock on the enclosure for locking the enclosure closed with the key on the inside of the enclosure including a locking cylinder having a longitudinally extending slot therein and a plurality of circumferentially extending grooves in spaced relation along the length thereof and a plurality of annular discs supported on the body of the enclosure positioned in side by side relation over the length of the cylinder having finger portions extending into a slot in the locking cylinder and movable in predetermined grooves in the locking cylinder when the discs are in predetermined longitudinal positions on the locking cylinder to permit rotation of the discs on the locking cylinder, whereby the locking cylinder is movable longitudinally of the discs with all of the discs in only one predetermined angular position on the locking cylinder, means for locking the cover of the enclosure with the locking cylinder in one predetermined position operable between the locking cylinder and the cover, and means for urging the locking cylinder into the one predetermined position operable between the body of the enclosure and the locking cylinder whereby with an automobile key positioned within the enclosure on the key securing means and the enclosure closed and locked, use of the key to start an automobile by a person whose faculties are impaired to the point where they are unable to open the combination lock and should therefore not be driving an automobile, is prevented.



3,867,824

PIPE WORKING METHOD AND APPARATUS

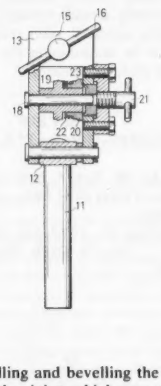
Tatsuya Takagi, No. 6-10, Araebisumachi, and Teruya Takagi, No. 6-4, Araebisumachi, both of Nishinomiya-shi, Hyogo-ken, Japan

Filed Sept. 27, 1973, Ser. No. 401,395

Claims priority, application Japan, Oct. 25, 1972, 47-106192

Int. Cl. B21d *19/06*

U.S. Cl. 72—118 **5 Claims**



1. A method for rolling and bevelling the end portion of a pipe to be coupled with a joint, which comprises the steps of, in turn, confronting the pipe at a position spaced a predetermined distance from the end thereof with an axially restrained groove-rolling roll and at the end thereof with an axially shiftable bevelling roll, pressing said groove-rolling roll against the pipe and rotating said groove-rolling roll relative to said pipe to roll an annular groove on the surface of the pipe, shifting said bevelling roll axially to cause said bevelling roll to be thrust against the end of the pipe, and rotating said bevelling roll relative to said pipe so as to bevel the end of the pipe while said groove-rolling roll is fittingly disposed in said annular groove previously rolled.

3,867,825

METHOD AND APPARATUS FOR COLD FORMING ROLLED WIRE

Heinz Striepens, Hamm, and Horst Schulte, Hamm-Westtunnen, both of Germany, assignors to Vereinigte Drahtindustrie GmbH, Hamm, Germany

Filed Apr. 5, 1973, Ser. No. 348,078

Claims priority, application Germany, Apr. 5, 1972, 2216368

Int. Cl. B21b *1/18*

U.S. Cl. 72—161 15 Claims

1. A method of cold forming wires for use as concrete reinforcing wires, said method comprising the steps of: unwinding a wire of predetermined diameter and advancing the same forwardly, introducing the wire into at least one set of rolls for polygonally shaping the wire and for reducing the cross section of said wire by at least 15% while shaping the wire, and thereafter repeatedly bending the wire in opposite directions to stress relief the wire to increase the elongation properties thereof, the wire being shaped and stress relieved to have a ratio between yield point and ultimate tensile strength of at least about 0.9.

3,867,826

STRETCHER FOR CONTINUOUSLY MOVING STRIP

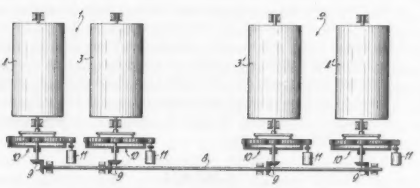
Oskar Noe, Mulheim/Ruhr, Germany, assignor to BWG Bergwerke-und Walzwerk Maschinenbau G.m.b.H., Duisburg, Germany

Filed Apr. 30, 1973, Ser. No. 355,449

Claims priority, application Germany, July 21, 1972, 2235833; Nov. 28, 1972, 2258192

Int. Cl. B21b *39/08*

U.S. Cl. 72—205 10 Claims



1. Apparatus for stretching strip such as sheet metal strip, comprising, in combination with two tensioning roll stands each of which comprises a plurality of strip tensioning rolls about which the strip is passed continuously for treatment under high tension between said stands and means for driving the strip through said roll stands, a common rotary shaft for coupling together all said tensioning rolls, each of said rolls being connected to said shaft through an individual gear train, each of at least all but one of said gear trains being a differential gear train comprising a central spur gear connected for rotation with said common shaft, epicyclic gears rotatable about and in mesh with said spur gear and connected for rotation with the related roll and a rotatable ring gear meshing with said epicyclic gears, and a variable torque back-up motor connected for rotation with each of said rotatable ring gears, each said back-up motor being a torque limiting motor operative at a given setting thereof to maintain a predetermined substantially constant torque on the related tensioning roll through the related differential gear train, the several back-up motors having different torque settings corresponding to the respective differential torques and strip tensions required at said rolls.

3,867,827

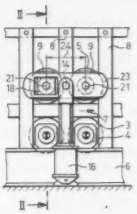
ROLLER APRON FOR A CONTINUOUS CASTING INSTALLATION

Karl L. Backhaus, West New York, and George Tuschak, Rego Park, both of N.Y., assignors to Concast Incorporated, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,529

Int. Cl. B21b *39/02*

U.S. Cl. 72—251 6 Claims



1. A roller apron for a continuous casting installation, especially equipped with withdrawal- and/or straightening rollers, wherein each of the rollers which follow in the direction of travel of a strand are guided transversely with respect to the strand direction of travel, the improvement comprising a common adjustment drive, support means including means providing a hinge connection for hingedly connecting two rollers which follow in the strand direction of travel with said common adjustment drive, and means for the automatic accommodation of the axial spacing of the hinge connection between said support means and rollers during their movement transversely with respect to the direction of travel of the strand.

3,867,828

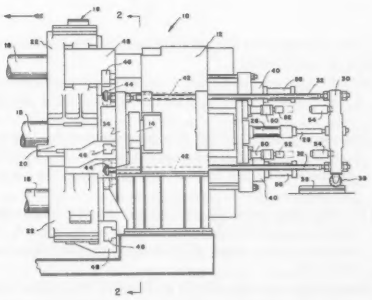
APPARATUS FOR POSITIONING THE CONTAINERS OF AN EXTRUSION PRESS

Francis J. Kent, Wallingford, and Herbert Schmidt, Springfield, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed May 14, 1973, Ser. No. 361,379

Int. Cl. B21c *23/00*

U.S. Cl. 72—263 4 Claims



1. In a press having a number of containers adapted to be selectively brought to and from a pressing station of the press and wherein a container in said station has a number of working and non-working phases,

a first hydraulic piston cylinder means connected to said containers capable of furnishing only the force necessary to move the containers when a container in said station is in a non-working phase or phases of operation,

a second hydraulic piston cylinder means connectable to said container in said station capable of furnishing the required force to move and maintain the container in said station during its working phase or phases of operation and capable of furnishing a substantially greater pressure than first said piston cylinder means,

wherein said containers are provided with registry means which are employed when the containers are in said station,

said second piston cylinder assembly means having means for registry with the container registry means when a container is in said station,

a first means for positioning said registry means of said container in a predetermined position,

a second means for positioning said registry means of said second piston cylinder assembly means in a predetermined position, and

said predetermined positions being such that a proper registry is made between said registry means of said container and of said second piston cylinder assembly means when a container is brought to said station.

3,867,829

ADJUSTABLE ARRANGEMENT FOR BENDING OF BARS OF REINFORCING STEEL MATS

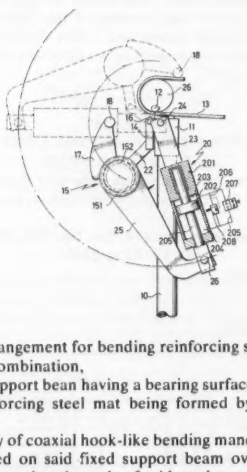
Rudolf Bock, Palmeistr. 9, 7031 Holzgerlingen, Germany

Filed July 25, 1973, Ser. No. 382,583

Claims priority, application Germany, Aug. 2, 1972, 2237895

Int. Cl. B21d *11/12*

U.S. Cl. 72—321 **6 Claims**



1. An arrangement for bending reinforcing steel mats, comprising in combination,

a fixed support bean having a bearing surface for supporting a reinforcing steel mat being formed by a plurality of rods;

a plurality of coaxial hook-like bending mandrels removably mounted on said fixed support beam over said bearing surface so that the rods of said steel mat can be inserted therebetween;

a bar engaging beam pivotally mounted in said arrangement relative to said fixed support beam about an axis which is parallel to the axes of said coaxial hook-like bending mandrels;

actuating means operatively connected to said bar engaging beam for pivoting it relative to said fixed support beam; a bending bar adjustably mounted on said bar engaging beam so that its arcuate path relative to said fixed support beam can be selectively adjusted;

hydraulic adjusting means operatively connected, on the one hand, to said bending bar and, on the other hand, to said bar engaging beam;

said hydraulic adjusting means comprising a cylinder, a double acting piston reciprocally mounted in said cylinder and dividing it into two chambers, conduit means communicating said two chambers, and closeable valve means mounted in said conduit means;

said hydraulic adjusting means being adapted to steplessly adjust the position of said bar engaging beam relative to said bending bar and is connected to an hydraulic power source.

3,867,830

FORGING PRESS

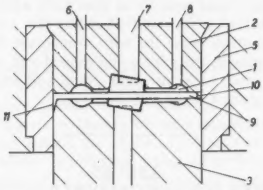
Heinz Dettwiler, Lupsingen, Switzerland, assignor to Hatebur Umformmaschinen AG, Basel, Switzerland

Filed July 25, 1973, Ser. No. 382,616

Claims priority, application Germany, Aug. 2, 1972, 2237913

Int. Cl. B21j *13/14*

U.S. Cl. 72—361 **9 Claims**



1. In a forging press including tong means for transporting a forging from the press, the invention which comprises

a. a die member; and

b. a punch member mounted for axial reciprocation relative to said die member, said punch member being adapted to co-operate with said die member in a working zone to produce a forging, the stroke of said punch member being such that said punch and die members in their operative position in the working zone are spaced apart to provide a gap therebetween so that a peripheral flash of the forging is formed in the gap;

c. at least one of the adjacent surfaces of said die and punch members containing in laterally spaced relation to said working zone a recess in communication with said gap, said recess extending axially of the press so that the flash extends into the recess to define an axial flash projection on the forging, said recess being so arranged that the flash projection produced therein is adapted for engagement by said transport tongs.

3,867,831

METHOD OF MANUFACTURING BRANCHED FITTINGS

Evgeny Nikolaevich Moshnin, ulitsa Akademika Pavlova, 50, kv. 5, Moscow; Nikolai Ivanovich Romashko, Leninsky raion, selo Molokovo, Moskovskaya Oblast; Vladimir Zakharovich Gurevich, Yasny proezd, 4, korpus 1, kv. 20, Moscow; Nikolai Stepanovich Voronov, ulitsa B. Khmelnitskogo, 68, kv. 18, and Viktor Ilich Deryabkin, ulitsa B. Khmelnitskogo, kv. 65, both of Belgorod, all of U.S.S.R.

Filed June 21, 1973, Ser. No. 372,415

Int. Cl. B21k *21/00*

U.S. Cl. 72—367 **3 Claims**

1. Method of manufacturing branched fittings from tubular metal stock, including the steps of compressing said stock in radial directions relative to its longitudinal axis with a first pair of cooperating dies having substantially cylindrical recesses of a complementary shape, one of said dies of said first pair having an opening intermediate the ends thereof for forming in said stock a bulge of a circular cross-sectional shape at the location of the branch outlet which is to be produced; subsequently upsetting said stock obtained through said compressing operation by a second pair of male dies driven towards each other longitudinally of said stock so as to impart to said stock a barrel-like shape and an oval cross-section to said bulge; and re-compressing said stock in radial directions relative to said longitudinal axis thereof after subjecting said stock

to said upsetting operation through a third pair of cooperating dies having recesses of a substantially cylindrical shape, said recesses in said third pair of dies being complementary to each other, said dies of said third pair being closed in the direction of the minor axis of said oval, each die of said third pair having an additional recess of a substantially cylindrical shape, said additional recesses, respectively, of said dies of said third pair being complementary to each other and extending transversely in respect of said first-mentioned recesses in said respective dies of said third pair, said additional recesses being adapted to effect final formation of said fitting branch from said bulge.

3,867,832

METHOD OF FORGING OF VARIOUS SHAPED ELEMENTS ON ELONGATED BARS AND A DEVICE FOR THE USE OF THIS METHOD

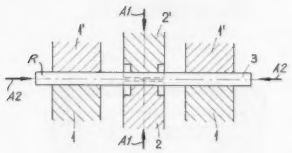
Tadeusz Rut, Poznan, Nowe Zagárze str. 14, Poland

Filed July 31, 1972, Ser. No. 276,722

Claims priority, application Poland, July 31, 1971, 149788

Int. Cl. B21j *5/08*

U.S. Cl. 72—399 **7 Claims**



1. A method of forging a predetermined shape into an elongated rod comprising upsetting the rod by applying opposed longitudinal forces on the rod and squeezing the rod perpendicularly thereof at the thusly resulting upset portion of the rod concurrently with the upsetting of the rod to apply transverse forces sufficient to deform said upset portion of the rod, the transverse forces being applied from opposite sides of the rod so that the upset and deformed portion of the rod is coaxial with the remainder of the rod, said portions of the rod to which the longitudinal forces are applied being moved towards one another in the course of upsetting of the rod, while the transverse forces are simultaneously applied and moved towards one another to progressively deform the portion of the rod being upset during the course of said longitudinal movement of the portion of the rod during upsetting.

3,867,833

METAL-WORKING MACHINE

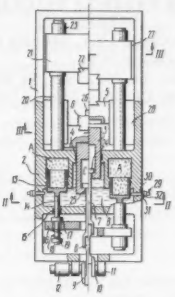
Anatoly Sergeevich Morgolenko, ulitsa Chkalova 15, kv. 434, Kharkov, U.S.S.R.

Filed May 4, 1973, Ser. No. 357,518

Int. Cl. B21d *7/06*

U.S. Cl. 72—407 **3 Claims**

1. A metal-working machine comprising a bed with a receiver having a closed cavity; a piston located on the axis of the machine and said receiver; a holder with a half of a working tool mounted on said piston; at least two lateral pistons with rods arranged symmetrically to said piston in the cavities of said receiver; a crosspiece connecting the rods of said lateral pistons, said crosspiece having at least two through holes; drawbars, one end of each of which is passed through said through holes of said crosspiece; a second holder with the other half of said working tool mounted at the other ends of said drawbars; a crank mechanism with connecting rod coupled to said piston located on the axis of said receiver, the spaces under said lateral pistons communicating with the space under said piston and being filled with liquid; the space above said lateral pistons being filled with compressed gas,



said crank mechanism serving to return said holders to the initial position after they have performed the working stroke.

3,867,834

FORGING PRESS HAVING ADJUSTABLE COLUMN GUIDES

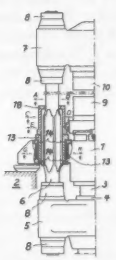
Helmut Robra, Muelheim/Ruhr, and Heinz Schmoll, Hueckeswagen, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 9, 1973, Ser. No. 349,085

Claims priority, application Germany, Apr. 8, 1972, 2217037

Int. Cl. B21j *13/04*

U.S. Cl. 72—456 **7 Claims**



1. In a forging press comprising a frame having a top crossmember, a bottom cross-member and four columns interconnecting said top and bottom cross-members, each said column having two parallel, opposed guide surfaces which are substantially parallel to a plane containing the axis of the respective said column and the axis of the diagonally opposite column, an intermediate cross-member through which said columns pass for guided vertical sliding movement of said columns in relation to said intermediate cross-member, said opposed guide surfaces providing the only substantial guidance between said columns and said intermediate crossmember, forging tool holding means for holding upper and lower forging tools for forging a workpiece, and drive means for driving said press for forging; the provision of adjustable guide means comprising respective vertically adjustable wedge-shaped members having guide surfaces which are substantially parallel to said plane and engage and are slidable relative to respective and column guide surfaces, and multipart bushes defining support surfaces supporting respective said wedge-shaped members with no substantial gaps between said wedge-shaped members and respective said support sur-

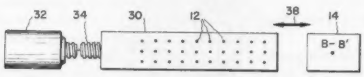
faces, said bushes being mounted on said intermediate cross-member.

3,867,835

CALIBRATION OF PARTICLE VELOCITY MEASURING INSTRUMENT

Roger E. Button, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 19, 1973, Ser. No. 408,247
Int. Cl. G01p *21/00, 5/20*
U.S. Cl. 73—1 D **7 Claims**



1. A calibration apparatus for calibrating a particle velocity measuring instrument defining an optical path for optically viewing particulate matter to generate signals as a function of the velocity of the particulate matter, comprising:

a slide disposed for receiving light emanating from along the defined optical path;

areas of contrast disposed upon the slide for receiving the light emanating from along the optical path to be optically viewed by the particle velocity measuring instrument; and

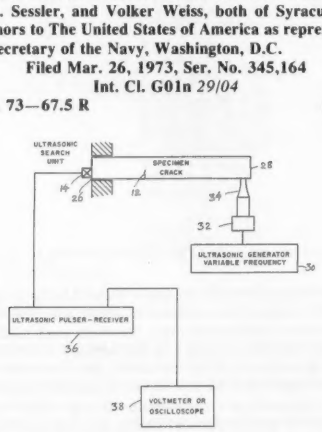
means for moving the areas of contrast disposed upon the slide in a linear path at a predetermined rate across the received light emanating from along the optical path for the generation of calibration signals as a function of the velocity of the areas of contrast traversing the received light at a predetermined rate.

3,867,836

CRACK DETECTION APPARATUS AND METHOD

John G. Sessler, and Volker Weiss, both of Syracuse, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1973, Ser. No. 345,164
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R **6 Claims**



1. An apparatus for non-destructively detecting cracks comprising:

an elongated specimen having a first end and a second end, said elongated specimen being cantilevered at the second end thereof;

a first source means for generating sound waves at a first frequency;

means for coupling the sound waves from said first source to the first end of said elongated specimen;

a second source means for generating electrical pulses at a second frequency, said second frequency being significantly higher than said first frequency, said second source means being proximate the second end of said elongated specimen;

means for adjustably pulsing said second source means for transmitting said electrical pulses at said second frequency at the second end through said elongated specimen;

means for detecting electrical pulses of said second frequency reflected at a crack's position in said specimen and thus forming an echo; and

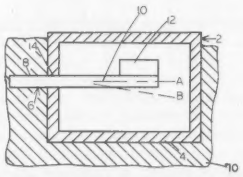
means for displaying said echo.

3,867,837

MOISTURE DETECTION

Eugene F. Malin, 1920 S. Ocean Dr., Apt. 1703, Fort Lauderdale, Fla. 33316

Continuation of Ser. No. 17.271, March 6, 1970, abandoned. This application Mar. 2, 1972, Ser. No. 231,308
Int. Cl. G01n *5/02*
U.S. Cl. 73—73 **9 Claims**



1. A porous media liquid quantity detector for detecting the quantity of liquid in adjacent porous media by transferring the liquid from the adjacent porous media to a detection area in the liquid quantity detector comprising:

a housing member to provide a capillary transfer and supporting housing cavity in the porous media when at least a portion of said housing member is placed in the porous media,

a liquid transfer and support means connected to said housing member, said liquid transfer and support means including,

a supporting portion connected to said housing member, and

a capillary transfer portion connected to said supporting means, said capillary transfer portion includes a first portion positioned to be adjacent the edge of the housing cavity to contact at a linking area the adjacent porous media to provide a capillary link for transferring liquid from said adjacent porous media along said capillary transfer portion, said capillary transfer portion includes a second portion positioned in said housing cavity for receiving the liquid transferred from said first portion, said capillary transfer portion supported between said first portion adjacent the linking area and said second portion in said cavity by said supporting portion, and

a signal means adjacent said second portion for detecting the quantity of liquid transferred from the said first portion to said second portion to provide an electrical output signal, said signal means includes a weight sensor means for sensing the weight change in said liquid transfer and support means.

3,867,838
INSTRUMENT HUB FOR THE MEASUREMENT OF FORCES AND/OR MOMENTS

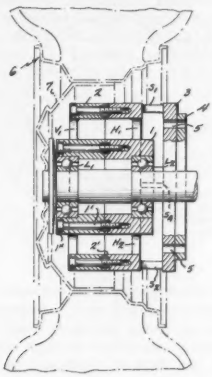
Manfred Gerresheim, Munich, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Continuation of Ser. No. 221,592, Jan. 28, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,303

Claims priority, application Germany, Jan. 28, 1971, 2104003

Int. Cl. G01l *5/16, 5/20*

U.S. Cl. 73—133 R **17 Claims**



1. An apparatus for measuring forces and/or moments acting on a rotor in motion comprising:

a hub having a pluraity of sets of beams with the beams in each set extending in planes forming right angles with respect to each other and resiliently deformable under the action of forces and/or moments applied to the hub, said beams extending in planes parallel to directions of individual forces applied to the hub and parallel to a plane perpendicular to the respective vector of moments produced by the hub so that the forces and moments cause only extensions and contractions of said beams, one of said sets comprising four beams extending parallel to each other and parallel to the rotational axis of the rotor, means for attaching said hub to said rotor, and

a plurality of strain gauges each attached to one of said beams so as to produce a signal varying as a function of the deformation of the beam to which it is attached.

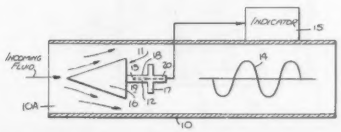
3,867,839
VORTEX-TYPE FLOWMETER HAVING STRAIN GAUGE SENSOR IN AN ELASTIC SUSPENSION

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Sept. 25, 1973, Ser. No. 400,641

Int. Cl. G01f *1/00;* **G01p** *5/8*

U.S. Cl. 73—194 B **8 Claims**



1. A flowmeter of the vortex type comprising:

A. a flow conduit through which fluid to be measured is conducted;

B. an obstacle assembly disposed within said conduit and constituted by a front section fixedly mounted across the conduit and contoured to cause flow separation and a downstream vortex street having a periodicity which is a function of flow rate, and a rear section cantilevered behind said front section to define a gap, said rear section being shaped to interfere with said vortex street and to strengthen and stabilize said vortex street, said rear section being slightly deflectable whereby it is excited into vibration by said street; and

C. means to sense the vibrating motion of said rear section to produce a signal whose frequency is proportional to flow rate, said means being isolated from said fluid and constituted by a strain gauge suspended by an elastomeric material within an enclosed cavity formed in said assembly, the position of said cavity being such as to cause it to bend in accordance with said vibrations to effect a flow of said elastomeric material within the cavity imposing a force on said gauge.

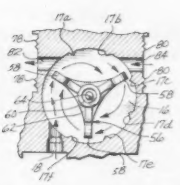
3,867,840
AXIAL OUTLET FLOW TRANSDUCER

Wilfried Baatz, Bellevue, Wash., assignor to FloScan Instrument Company, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 223,469, Feb. 4, 1972, abandoned. This application May 29, 1973, Ser. No. 364,231

Int. Cl. G01f *1/08*

U.S. Cl. 73—229 **17 Claims**



1. A flow transducer comprising:

a. housing means defining a flow chamber having a wall, said wall being circular in cross-section;

b. a rotor having a central rotational axis and having a plurality of blades extending outwardly from said central axis, and means mounting said rotor in said chamber for rotation about said axis responsive to fluid flow in said chamber;

c. means in said housing for detecting the angular frequency of rotation of said rotor;

d. inlet means in said housing means for injecting fluid into said chamber substantially tangentially to the wall of said chamber to establish flow around said chamber;

e. outlet means located to discharge fluid from said chamber; and

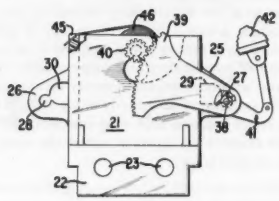
f. flow disturbing means in said chamber comprising a plurality of projections on the wall of said chamber, said projections having at least two side walls extending inwardly relative to the wall of said chamber and intersecting each other to form an edge located adjacent the peripheral portion of the path defined by the periphery of said blades when said rotor is rotating, said projections being triangularly shaped in cross-section, said flow disturbing means causing the rotational speed of said rotor to be reduced at high rotational speeds.

3,867,841

ONE-PIECE SNAP ASSEMBLY PLASTIC MOVEMENT FOR GAUGES

Charles R. Widlund, Schwenksville, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed May 9, 1973, Ser. No. 358,706
Int. Cl. G011 *19/00, 7/04*
U.S. Cl. 73—432 A 8 Claims



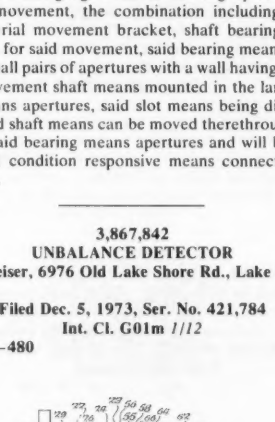
1. In an indicator gauge or the like having a pinion, segment and arbor movement, the combination including a unitary plastic material movement bracket, shaft bearing means in said bracket for said movement, said bearing means including large and small pairs of apertures with a wall having slot means therein, movement shaft means mounted in the larger of said bearing means apertures, said slot means being dimensioned whereby said shaft means can be moved therethrough into the smaller of said bearing means apertures and will be retained therein, and condition responsive means connected to said shaft means.

3,867,842

UNBALANCE DETECTOR

Alfred A. Reiser, 6976 Old Lake Shore Rd., Lake View, N.Y. 14085

Filed Dec. 5, 1973, Ser. No. 421,784
Int. Cl. G01m *1/12*
U.S. Cl. 73—480 12 Claims



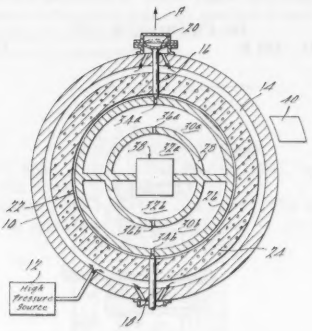
1. An unbalance detector comprising base means, a shaft having first and second spaced portions, bearing means mounting said shaft on said base means, means on said first portion for mounting a workpiece to be balanced, whereby said workpiece may gravitate to a position wherein its point of effective maximum unbalance is located at bottom dead center, motor means, speed control means for said motor means, slip-coupling means effectively located between said motor means and said second portion of said shaft, whereby said point of effective maximum unbalance may be substantially maintained in a predetermined position other than bottom dead center by adjusting the speed of said motor means, and means correlated with said speed control means for indicating the value of the counterweight required to maintain said point of effective maximum unbalance in said predetermined position.

3,867,843

MISSILE ALTITUDE SENSING SYSTEM

Henry F. McKenney, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 25, 1969, Ser. No. 810,389
Int. Cl. G01c *21/16*
U.S. Cl. 73—490 6 Claims



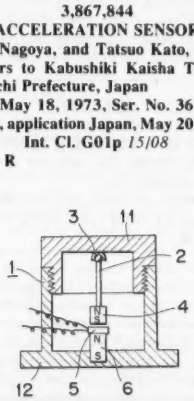
1. An altitude sensing system for a missile during its boost phase comprising a spherical shell, a hydrostatic perforated bearing structure enclosing said shell, a gas pressure source for providing high pressure flow through said bearing structure to support said shell on a pressurized gas film, a first integrating chamber of said shell, a second integrating chamber of said shell formed interior of said first chamber, a first pair of integrating orifices formed in said first chamber along the longitudinal axis of said missile, one at the upper and the other at the lower end of said first chamber, said first pair of orifices communicating between said gas film and the interior of said first air chamber, a second pair of integrating orifices aligned along said axis at opposite ends of said second chamber, said second pair of orifices communicating between said second chamber and said first chamber, respectively, and a differential pressure sensing means mounted in said second chamber for providing a control output signal responsive to a pressure differential representative of predetermined missile displacement.

3,867,844

ACCELERATION SENSOR

Tetsuji Shimizu, Nagoya, and Tatsuo Kato, Inazawa, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Prefecture, Japan

Filed May 18, 1973, Ser. No. 361,567
Claims priority, application Japan, May 20, 1972, 47-49556
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 R 1 Claim



1. An acceleration sensor comprising a casing; a first magnet suspended vertically within said casing by means of a ball joint; a semiconductive magneto-electric transducer element arranged just below said magnet; and a second magnet fixed

to the casing and to the lower part of said semiconductive magneto-electric transducer element in the attractive relationship with said first magnet, whereby the displacement of said first magnet due to acceleration greater than a predetermined value causes variation of an electric current flowing through said transducer element to detect the acceleration.

3,867,845

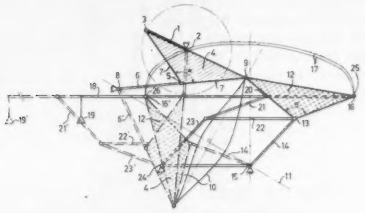
DEVICE FOR CONVERTING A ROTARY MOVEMENT INTO A SYMMETRICAL RECIPROCATING MOVEMENT

Hendrikus Jan Antuma, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 386,334, Aug. 7, 1973,. This application June 12, 1974, Ser. No. 478,574

Int. Cl. F16h *21/16*

U.S. Cl. 74—25 **6 Claims**



1. A device for converting a rotary movement into a symmetrical reciprocating movement, utilizing a bar system comprising a first isosceles coupling triangle, a first base vertex of which is connected to a rotatable crank, its top vertex being pivotably connected to a fixed point by a bar of a length which is equal to that of the legs of the triangle, with the result that the second base vertex performs a symmetrical reciprocating movement with acute reversing points, the symmetry line thereof passing through said fixed point, wherein the said second base vertex is connected to a base vertex of an isosceles second coupling triangle, the top vertex of which is pivotably connected to a fixed point by a bar having the same length as the legs of the triangle, said fixed point being situated at least substantially on said symmetry line of the movement of the second base vertex of the first triangle.

3,867,846

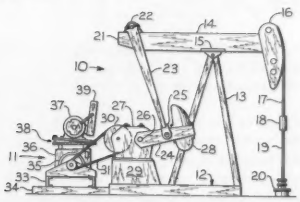
HIGH SLIP PRIME MOVER FOR PUMPJACK APPARATUS

Lonnie Kenneth Cambern, Odessa, Tex., assignor to Vance Industries, Inc., Odessa, Tex.

Filed June 5, 1973, Ser. No. 367,214

Int. Cl. F16h *21/18*

U.S. Cl. 74—41 **6 Claims**



1. In a pumping unit having a driving means connected to a crank, with the crank being connected to a walking beam, wherein the driving means effects rocking motion into the walking beam, the improvement comprising:

said driving means includes a reduction gear assembly, an electric induction motor, and a torque converter, a belt drive means by which said motor is connected to drive said torque converter;

said reduction gear assembly having a power output drive connected to rotate the crank and having a power input drive, said torque converter having a power output shaft connected to said power input drive;

said torque converter includes a fluid reservoir, a radiator, and a converter housing; said housing being affixed to said reservoir with said torque converter shafts being received through the reservoir;

a base, hinge means by which said motor can be pivoted towards and away from said base, means for controlling the angular disposition of the motor relative to the base so that the tension of the belt drive means can be controlled;

whereby said motor delivers a relatively steady flow of power to said torque converter while said torque converter delivers a relatively unsteady flow of power to said reduction gear assembly.

3,867,847

ARRANGEMENT FOR RAISING AND LOWERING OR RETAINING THE INDUCTOR IN ITS UPPER MOST POSITION IN EQUIPMENT

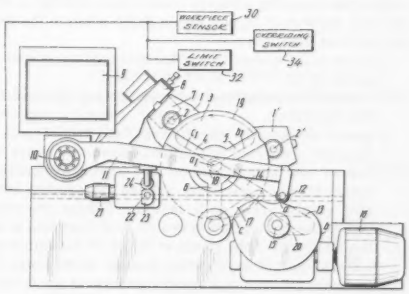
Friedhelm Reinke, Renicheid, and Edgar Stengel, Wuppertal-Hahnerberg, both of Germany, assignors to AEG-Elotherm GmbH, Postfach, Germany

Filed Sept. 12, 1973, Ser. No. 396,472

Claims priority, application Germany, Sept. 13, 1972, 2244847

Int. Cl. F16h *25/08*

U.S. Cl. 74—55 **2 Claims**



1. In apparatus for raising and lowering or retaining an inductor in its uppermost position in equipment for inductively hardening elongated workpieces which are mounted between centers on the arms of a pair of spiders indexable into several consecutive treating stations by a slotted plate which is mounted for movement with the spiders and coaxially therewith, a roller which moves on a curve generated by a four-bar linkage working in the slots, while the shaft driving one crank of the linkage carries a substantially reniform cam disc of which the peripheral cam contour cooperates with a follower roller on a lifting arm which carries the heating inductor, and which extends within range of a locking means, the improvement wherein the locking means comprises a second cam disc mounted on a drive shaft and drivable by a geared motor, the cam contour having a radius which within a predetermined angular range increases as a monotonous function of the cam angle and the cam cooperating with a second follower roller mounted on the lifting arm, means for sensing the absence of a workpiece for mounting on said spider and producing a signal responsive thereto to operate said geared motor to rotate said second cam disc, and limit switch means for stopping said geared motor at a predetermined angular position in

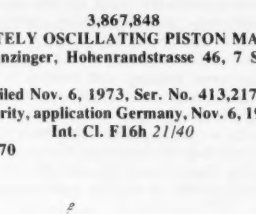
which said lifting arm is held out of operative contact with said reniform cam disc.

3,867,848

ARCUATELY OSCILLATING PISTON MACHINE

Friedrich Munzinger, Hohenrandstrasse 46, 7 Stuttgart 80, Germany

Filed Nov. 6, 1973, Ser. No. 413,217
Claims priority, application Germany, Nov. 6, 1972, 225423
Int. Cl. F16h *21/40*
U.S. Cl. 74—70 **8 Claims**



1. An oscillating engine of the type having a piston that is connected to a pivotally-mounted piston shaft such that the shaft rocks coaxially with the piston over an angular range of between 180° and 360°, said engine also having a crankshaft mounted with its axis parallel to that of the piston shaft, and said engine including a linkage transmission drivingly connecting said crankshaft to said piston shaft, wherein the linkage transmission comprises:

a piston crank connected to and arranged to rock with the piston shaft;

a crankshaft crank connected to and arranged to rotate with the crankshaft;

a piston connecting rod having first and second ends hingedly connected at said first end to said piston crank and at said second end to said crankshaft crank, the length of said connecting rod and the spacing between said cranks being such that the linkage transmission passes through a position in a cycle of operation at which the mid-point of the piston in its arc of oscillation corresponds with one dead-center position of the piston crank and also with one dead-center position of the crankshaft crank; and

a mass operatively attached to said connecting rod and disposed such that the center of gravity of the mass is remote from a line passing through the two hinge points of said piston connecting rod when the piston is at the mid-point of its arc of oscillation;

whereby the mass acts as a means resolving the driving and the driven forces which are present at the two hinge points when the piston swings through the mid-point of its arc of oscillation.

3,867,849

REVOLUTION MOVEMENT DRIVING APPARATUS

Toshiaki Onoda, Yokohama, and Yoshimasa Ito, Kawasaki, both of Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan

Filed Aug. 6, 1973, Ser. No. 386,097
Claims priority, application Japan, Aug. 9, 1972, 47-79828; Aug. 11, 1972, 47-79918
Int. Cl. F16h *21/17*
U.S. Cl. 74—109 **7 Claims**

1. A revolution movement driving apparatus comprising:

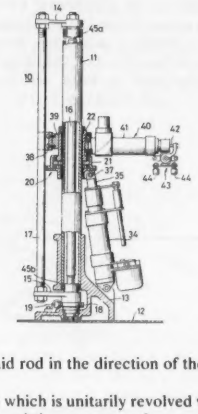
a stationary support of a hollow shape uprightly fixed on a base;

a rotating shaft inserted through the hollow part of said fixed support;

drive means for rotating said rotating shaft;

a rod provided in parallel with said rotating shaft on the outside of said stationary support and revolvable unitarily with said rotating shaft;

means for transmitting a revolving force by revolving about said stationary support with said rod, said means being



engaged to said rod in the direction of the rotation of the rod;

a revolving part which is unitarily revolved with said revolving force transmitting means; and

a bearing device for supporting said revolving force transmitting means and said revolving part revolvably about the stationary support,

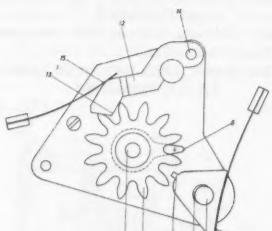
the load for said bearing device being carried by the stationary support.

3,867,850

SHIFTING MECHANISM AND WATCH

Bernd Bechtold, Bildingen, Germany, assignor to Firma Berhard Forster, Pforzheim, Germany

Filed June 21, 1973, Ser. No. 371,961
Claims priority, application Germany, Mar. 31, 1973, 2316228
Int. Cl. F16h *27/02*
U.S. Cl. 74—142 **9 Claims**



1. In a shifting mechanism comprising a locking pawl provided with a locking cone and hour shifting wheel with teeth with said locking pawl being spring biased to engage said teeth, the improvement comprising the inclusion of:

a pivoted shifting pawl adapted to engage said teeth,

a second spring means biasing said shifting pawl toward an initial angular position,

a rotatably mounted shifting finger, and driving means for rotating said shifting finger, said shifting finger being arranged to temporarily

engage said shifting pawl and impart a pivotal movement thereto from said initial angular position during a rotational movement of said shifting finger through a predetermined angular range,

said shifting pawl being arranged to engage one of said teeth during said pivotal movement,

at least one of the parts consisting of said wheel and shifting pawl being resiliently yieldable so as to move away from the other of said parts in response to the engagement of said shifting pawl with said one tooth during said pivotal movement so that said shifting pawl can move past said one tooth during said pivotal movement,

the arrangement being such that said shifting finger releases said shifting pawl when the same has been pivotally moved past said one tooth and that in response to the release of said shifting pawl by said shifting finger said yieldable part springs back toward the other of said two parts and said shifting pawl springs back to said initial angular position under the action of said second spring means so as to engage said one tooth and to overcome said restraining force and impart to said wheel a predetermined sudden angular movement.

3,867,851

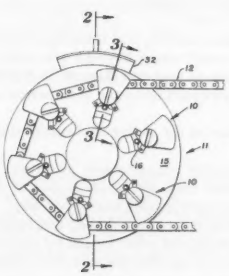
RADIALLY EXPANSIBLE SPROCKET WITH ROTATABLE TEETH SEGMENTS

Lawrence Gregory, St. Paul; Lloyd Murphy, and Donald H. Hagen, both of Minneapolis, all of Minn., assignors to Hagen International Inc., Minneapolis, Minn.

Filed Aug. 23, 1973, Ser. No. 390,956

Int. Cl. F16h *55/30*

U.S. Cl. 74—244 **4 Claims**



1. A sprocket unit for chain drive mechanisms, such mechanisms have a driving member and at least one such sprocket unit thereon for engaging a chain and driving the same, said sprocket including:

a. a bearing member mounted on said driving member;

b. a sprocket segment having at least two radially outwardly extending, chain engaging teeth thereon and a pair of radially inwardly extending arm members arranged thereon, said segment being mounted for rotation about said bearing; and,

c. stop means for limiting the rotation of said segment about said bearing member, said stop means being arranged between said arm members whereby said segment is brought into driving engagement with the chain and upon engagement with said stop, will drive the chain.

3,867,852

FIXED OR ROTATABLE STRUCTURAL PART CONSISTING OF AN INNER AND OF AN OUTER PART

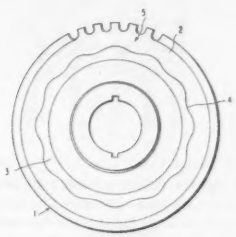
Hans-Joachim Schopf, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Nov. 23, 1973, Ser. No. 418,174

Claims priority, application Germany, Nov. 24, 1972, 2257598

Int. Cl. F16h *55/12*

U.S. Cl. 74—446 **22 Claims**



1. A structural member consisting of at least an inner part and of an outer part, whose one part forms a base body and whose other part forms a running surface, the mutual contact surface means of the two parts, which extend in the circumferential direction, being constructed undulatory, characterized in that said one part forming the base body is at least as wide within the area of the other part as the latter, and in that the undulations start at least from the end surfaces of said other part.

3,867,853

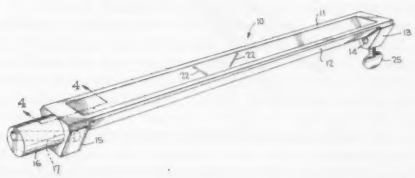
CHAINSAW FILE HOLDER

John Lawless, Saunderstown, R.I., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 26, 1974, Ser. No. 445,912

Int. Cl. B23d *63/08, 71/04*

U.S. Cl. 76—36 **5 Claims**

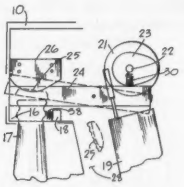


1. A chainsaw file holder comprising an elongated body portion of generally V-shaped transverse section, the legs of said V being disposed at substantially 90° to each other, transversely extending flanges at either end of said body portion and projecting beyond the bottom of said V, one said flange being formed to provide a cylindrical bore extending in a direction away from said body portion and having its axis in the central longitudinal vertical plane of said body portion, said bore inclining upwardly from an opening in that surface of said flange nearest said body portion, said opening being tangent to the apex formed by the intersection of the planes of the outer side surfaces of the V-shaped body portion, said other flange having a cylindrical hole extending therethrough and having its axis in said central longitudinal vertical plane and its circumference tangent to said apex, and means for securing a chainsaw file in said holder with the point end thereof abutting the wall of said bore and the other end extending through said hole.

3,867,854
ELECTRICAL BOTTLE OPENER

Ivan R. MacLeod, Timmins, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 6, 1974, Ser. No. 448,662
Int. Cl. B67b 7/16
U.S. Cl. 81—3.2 3 Claims

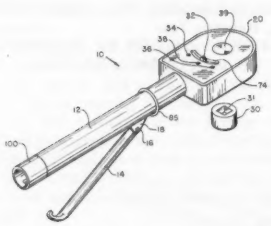


1. A bottle opener device powered by an electric motor which consists of a pivoted bar rotated by a drive powered by the electric motor so as to deform the rim and top of a bottle cap attached to a bottle and to free the cap from the bottle, said lifter bar being fitted with flanges which fit about the neck of a bottle and under the attached cap rim, with said lifter bar slotted along its mid axis, with a stationary cam fitted loosely in the slot of the lifter bar which engages and deforms the top of a bottle cap lifted by the flanges of the lifter bar.

3,867,855
LEVER ACTUATED RATCHET WRENCH

Cletus J. Siebert, 5329 W. Geddes Ave., Littleton, Colo. 80123

Filed Dec. 10, 1971, Ser. No. 206,742
Int. Cl. B25b 13/46
U.S. Cl. 81—63.1 18 Claims

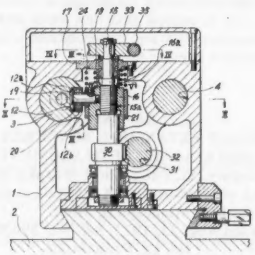


1. A ratchet wrench assembly comprising:
a. a handle;
b. a ratchet component support connected with said handle;
c. a ratchet gear mounted to said support for substantially 360° rotation in either of two opposite directions;
d. actuating means operably connectable with said ratchet gear and movable between a first point and a second point for rotating said ratchet gear;
e. a ratchet gear rotation control assembly operably positioned between said actuating means and said ratchet gear, (i) said assembly being positionable in a first position for rotating said ratchet gear in one direction in response to the movement of said actuating means from said first point to said second point, (ii) said assembly being positionable in a second position for rotating said ratchet gear in an opposite direction in response to the movement of said actuating means from said first point to said second point, and (iii) said assembly being positionable in a third position for freeing said ratchet gear for rotation in either of said opposite directions when said actuating means is at one of said first and second points; and
f. a rotation selector arrangement connected with said ratchet gear rotation control assembly for alternatively positioning said rotation control assembly in said first, second and third positions whereby said wrench assembly is adapted alternatively to rotate a work piece in opposite directions utilizing similar actuating motion and whereby the handle of said assembly may be repositioned from one point to another without effecting movement of the work piece and yet without disengaging the wrench assembly from the work piece.

3,867,856
TAIL STOCK

Takeshi Ota, Aichi-ken, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 28, 1974, Ser. No. 456,003
Claims priority, application Japan, Apr. 5, 1973, 48-41147
Int. Cl. B23d 23/00
U.S. Cl. 82—31 12 Claims



1. A tail stock for compensating for tapering of a workpiece to be machined, comprising:
a housing;
a center sleeve slidably and rotatably mounted in said housing, said center sleeve having a bore with a predetermined eccentricity in one end thereof for holding a center and a guide way parallel to the axis thereof on the periphery thereof;
actuating means for sliding said center sleeve in said housing;
roller means for engaging said guide way and movable in dependence upon rotational motion of said center sleeve so as to keep engaging said guide way;
compensating means provided on said housing and operably connected to said roller means for rotatively moving said center sleeve by allowing said roller means to move in a rotational direction of said center sleeve; and
driving means operatively connected with said compensating means for actuating the same.

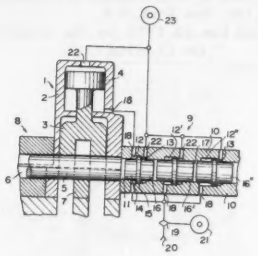
3,867,857
MATERIAL CUTTING DEVICE

Hiroshi Tominaga, Yokohama, Japan, assignor to Tokyu Sharyo Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Nov. 30, 1973, Ser. No. 420,733
Int. Cl. B23d 15/04, 15/14
U.S. Cl. 83—9 10 Claims

1. A material cutting device comprising a movable tool having a cutting edge for cutting a workpiece, a holding mechanism for holding the workpiece in position, and a compression means adapted to exert impact force on said workpiece in an axial direction to facilitate high speed cutting of the workpiece, said compression means including at least two piston hammers arranged coaxially with a workpiece in end to end relation to each other with a suitable space therebetween, and means for sequentially displacing said hammers into per-

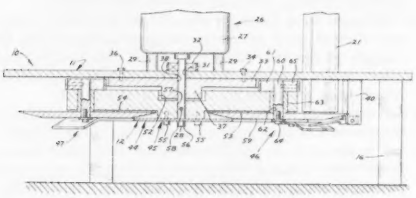
cussive contact with each other and said workpiece to effect an axial compression of said workpiece whereby the coincident operation of said cutting edge and compression means facilitates the shearing of said workpiece.



3,867,858
FROZEN FISH CUTTER

Takuzo Tsuchiya, Minneapolis; Kenneth J. Valentas, Golden Valley, both of Minn., and Donald W. Morse, Rowley, Mass., assignors to The Gorton Corporation, Gloucester, Mass.

Filed July 30, 1973, Ser. No. 384,167
Int. Cl. B26d *7/06, 4/24*
U.S. Cl. 83—113 **12 Claims**



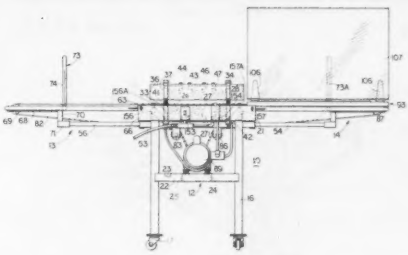
1. Apparatus for cutting slices of meat from a column of frozen meat, said apparatus comprising:
first support means including means for holding said column of meat in position for cutting of slices;
at least one blade for cutting a slice from said column of meat;
second support means including a shoe for supporting said slice during said cutting:
means for moving said blade through said column of meat thereby cutting slices of meat from said column of meat; and
means for removing the slice from said shoe.

3,867,859
MACHINE FOR FORMING INDICIA FOR SAND BLASTING

John L. Hirons, Rt. 1, Box 28, Mount Orab, Ohio 45154

Filed Feb. 6, 1974, Ser. No. 439,911
Int. Cl. B26d *1/56*
U.S. Cl. 83—284 **4 Claims**

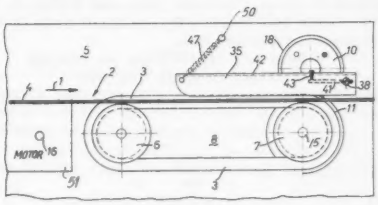
1. A machine for forming indicia from a sheet of rubber-like material which comprises a carriage including a table portion having a lower bearing face and an upper sheet supporting face and a plate of transparent material adapted to overlie the sheet supporting face, the sheet supporting face being arranged to support the sheet with cutting tools arranged thereon, a frame, vertically spaced rollers mounted on the frame, and means for advancing the carriage between the rollers to cause the plate to be urged against the cutting tools to cause the cutting tools to cut indicia from the sheet.



3,867,860
DEVICE FOR CUTTING OPEN LETTER ENVELOPES

Werner Haug, Langnau, Switzerland, assignor to Frama A.G., Luperswil, Switzerland

Filed Oct. 5, 1973, Ser. No. 404,012
Claims priority, application Switzerland, Oct. 9, 1972, 14749/72
Int. Cl. B43m *7/00*
U.S. Cl. 83—368 **12 Claims**



1. A device for cutting open envelopes, comprising means defining a guideway for envelopes, a motor driven conveying mechanism provided along said guideway engageable with the envelopes for moving them along said guideway, a pair of cooperative cutting blades arranged in opposition along said guideway and defining a cutting plane, said cutting plane being adjustable in respect to a side of said guideway, said guideway serving to guide the envelope edges to be cut open so that they are moved between said cutting blades, a sensing member engageable with each letter moved by said conveying mechanism along said guidway, an adjustment mechanism for the pair of cutting blades for shifting at least one of said blades laterally and being connected to said sensing member and actuated by displacement of said sensing member by the transported envelope according to the thickness thereof to vary the position of said cutting blades so that the distance of the cutting plane is changed as a function of the sensing member displacement.

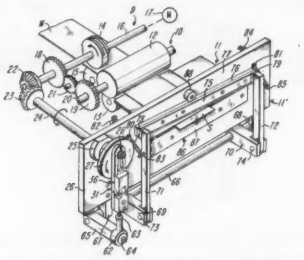
3,867,861
SELECTIVE DRIVE CONNECTION FOR A CUTTING APPARATUS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Mar. 4, 1974, Ser. No. 448,094
Int. Cl. B26d *5/14*
U.S. Cl. 83—571 **10 Claims**

1. Apparatus for printing and cutting sheets from a web, comprising: a cutting mechanism, drive means, a connecting

rod driven by the drive means and drivingly connected to the cutting mechanism, the drive means including a drive pin driven in a circular path, and a selective drive connection between the drive pin and the connecting rod settable in either



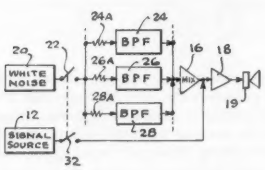
one position in which the drive pin drives the connecting rod to in turn operate the cutting mechanism or in another position in which the drive pin is ineffective to drive the connecting rod.

3,867,862

ELECTRICAL MUSICAL INSTRUMENT

Edward M. Jones, Cincinnati, Ohio, and William C. Wayne, Jr., South Fort Mitchell, Ky., assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed June 11, 1973, Ser. No. 368,608
Int. Cl. G10h *1/06, 5/00*
U.S. Cl. 84—1.19 **12 Claims**



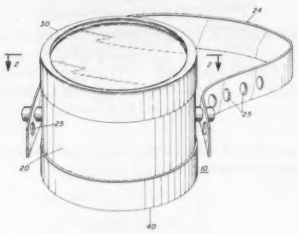
1. An electrical musical instrument having a plurality of musical tones corresponding in frequency to the semi-tones of the equally tempered musical scale including an electrical tone signal source for each of the musical half-tones of said instrument, electro-acoustic output means electrically coupled to said sources of tone signals, a plurality of electrical switches, a different one of said switches being electrically coupled to each electrical tone signal source for selectively controlling excitation of the electroacoustic output means, and a source of electrical noise characterized by the improved construction wherein the source of electrical noise has means for generating a plurality of bands of electrical noise, said bands having center frequencies differing approximately by by half-tone steps from each other, and electrical circuit means responsive to each of the electrical switches for coupling a plurality of bands of electrical noise to the electro-acoustic output means, each of said plurality of bands having bands with center frequencies approximately equal to harmonics of that electrical tone signal source coupled to the same electrical switch.

3,867,863

TOY DRUM

Jorma Vennola, Princeton, and Erkki Pekka Korpijaako, Hightstown, both of N.J., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,000
Int. Cl. G10d *13/02*
U.S. Cl. 84—420 **3 Claims**



1. A toy drum comprising:
an open-ended cylindrical shell having first and second apertures on opposite sides thereof;
an elongated dowel fitted through said apertures so as to protrude through said shell on both sides thereof;
an elongated strap having a plurality of apertures at each end thereof, said apertures being proportioned to fit snuggly on the protruding end of said dowel so that the effective length of said strap is adjustable by selection of which strap apertures are coupled to the dowel;
a first drumhead formed of an integral piece of plastic, said drumhead including an annular retaining collar conforming in shape to an end of said shell, said collar having joined inner and outer rings which contact the inner and outer extremities of said shell end, and a flat circular striking surface joined to the inner ring of said collar such that said striking surface is recessed within said shell; and
a second drumhead formed of an integral piece of plastic, said second drumhead including an annular retaining collar conforming in shape to the opposite end of said shell, said collar having gained inner and outer rings which contact the inner and outer extremities of said opposite end of the shell, and a flat circular striking surface joined to the inner ring of said collar such that said striking surface is recessed within said shell.

3,867,864

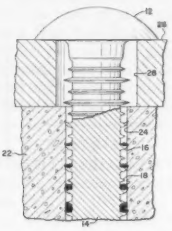
ANCHOR DEVICE

Friedrich Karl Knohl, Roselle, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Oct. 10, 1973, Ser. No. 405,207
Int. Cl. F16b *15/06*
U.S. Cl. 85—21 **4 Claims**

1. A drive-in anchor device including a shank and an integral head, the shank being provided throughout the major portion of its length with a plurality of sharp crested annular rings, said plurality including a plurality of rings having a first crest diameter and a plurality of rings having a second crest diameter alternately positioned along the length of the shank, the root portion of adjacent rings being spaced axially from one another to such an extent that the axial distance between adjacent crests is large enough to permit the larger rings to flex without interference from the smaller rings, the included flank angle of the larger annular rings being generally 30° and the included flank angle of the smaller annular rings geing

generally 40°–60° wherein each ring is capable of flexing and aggressively impinging an associated hole to insure secure-



ment of the anchor in a range of actual hole sizes and still allow the smaller rings to center the device within the hole.

3,867,865

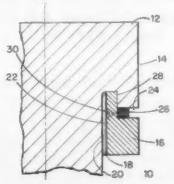
TWO-PART, TWO-MATERIAL FASTENING ELEMENT

Norman C. Dahl, 40 Fern St., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 223,259, Feb. 3, 1972, Pat. No. 3,757,630. This application June 18, 1973, Ser. No. 370,966

Int. Cl. F16b *31/02*

U.S. Cl. 85—62 **11 Claims**



1. A two-part, two-material improved bolt, which bolt comprises in combination:

a. a bolt head integrally secured to said bolt, said bolt head having a peripheral wrenching surface thereon and a cylindrical extension depending therefrom having an inner surface spaced apart from the outer surface of the bolt;

b. a force ring extension element having substantially the same outer peripheral wrenching surface as the bolt head and a cylindrical sleeve extending therefrom, which, on being matingly engaged with the bolt head, forms an external groove on the outer wrenching surface, the bottom of said groove and the inner surface of the cylindrical sleeve defining an annular yielding section which plastically deforms radially inwardly when a predetermined force acts upon the bolt, with resulting reduction in the axial width of the external groove; and

c. the bolt head and the force ring extension element formed of different materials, the force ring extension element containing the yielding section which plastically deforms radially inwardly when a predetermined force acts on the bolt being composed of a material with stress-strain characteristics which are particularly suited to obtain a small variation in the bolt force indicated by the plastic deformation, while the material of the bolt head differs in stress-strain properties from the material of the force ring extension element.

3,867,866

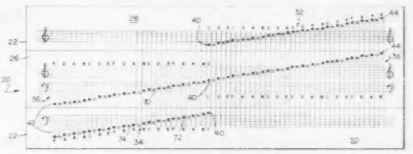
MUSIC TRANSPOSING RULE

Frazier Adams, 456 N. Edgemoor, Wichita, Kans. 67208

Filed July 23, 1973, Ser. No. 381,413

Int. Cl. G09b *15/02*

U.S. Cl. 84—473 **6 Claims**



1. A music transposing rule comprising a stationary member having a channel, a slidable member longitudinally slidably disposed within said channel, said stationary member including a first scale divided into an upper spaced section and a lower spaced section, said slidable member including a second scale, said first scale and said second scale bear a representation of a musical stave, said first scale comprises a first treble clef scale traversing approximately half of said upper spaced section and a first bass clef scale extending across approximately half of said lower spaced section, and said second scale comprises a second bass clef scale and a second treble clef scale longitudinally labeled in order stated across said second scale.

3,867,867

CAVITIES WITH FLUENT MATERIAL

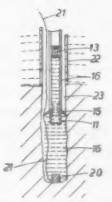
John Sweton Duff, Adrossan, Scotland, assignor to Imperial Chemical Industries Limited, London, England and Rock Fall Company Limited, Glasgow, Scotland

Filed May 15, 1973, Ser. No. 360,456

Claims priority, application Great Britain, May 31, 1972, 25492/72

Int. Cl. F42b *3/00*; **F42d** *1/00*

U.S. Cl. 86—20 C **5 Claims**

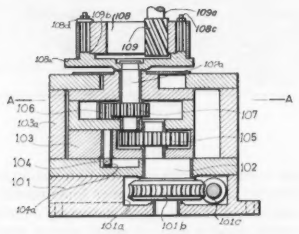


1. In a method of underwater blasting wherein explosive fluent material is loaded into a borehole the steps of loading the fluent material from a fluent material supply into a loading tube through one end of said tube against one side of a freely-slidable double-acting piston positioned within and movable along said tube, detaching said tube from said fluent material supply, sealing the same end of said tube with an end stopper, inserting the same end of said tube into the borehole, displacing said end stopper from the same end of said tube, and expelling said fluent material through the same end of said tube into the borehole by applying a pressurized fluid through the other end of said tube against the other side of said piston to move said piston along said tube.

3,867,868
APPARATUS FOR THE MACHINING OF CYCLOIDAL SURFACES

Lajos Natkai, Budapest, and Janos Lenkefi, Nagykanizsa, both of Hungary, assignors to Orszagos Koolaj- es Gazipari Troszt, Budapest, Hungary

Filed May 14, 1973, Ser. No. 360,199
Int. Cl. B23c *3/04;* **B24b** *5/00*
U.S. Cl. 90—20 **4 Claims**



1. An apparatus for the machining of a cycloidal workpiece to impart thereto the configuration of a cycloid defined by rotating an osculating circle in contact with a base circle, said circles having respective axes and different radii and together defining a center of moments, the smaller raduis circle lying within the larger radius circle, said apparatus comprising:

a tool engageable with said workpiece at a machining location;

a pivotal member having a pivot at said center;

means for guiding said pivot in a linear path fixed with respect to said location and aligned therewith;

a crank centered on said location and articulated to said member at one of said axes;

means mounting said workpiece for rotation about the other of said axes;

meshing gear means for rotating said mounting means about said other of said axes at a fixed ratio to the pivotal displacement of said crank,

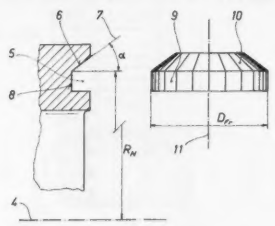
drive means operatively connected to said crank for rotating same about an axis aligned with said location, said tool being rotatable and having a radius less than the smallest radius of curvature of the cycloidal surface to be generated in said workpiece and smaller than either of said radii, and said tool being rotatable about an axis disposed upon a line connecting said path and said location but offset from said one of said axes.

3,867,869
STATIONARY GUIDE BLADE STRUCTURE FOR AXIAL-LOW TYPE TURBO-MACHINE

Ernst Nyffeler, Wettingen, and Peter Pfenicher, Gebenstorf, both of Switzerland, assignors to BBC Brown, Boveri & Co., Baden, Switzerland

Filed Aug. 1, 1973, Ser. No. 384,509
Claims priority, application Switzerland, Aug. 16, 1972, 12118/72
Int. Cl. B23c *3/00;* **F01d** *25/24*
U.S. Cl. 90—11 C **1 Claim**

1. The method of machining an arcuate slot into a lateral surface of the root portion of a stationary guide blade lying in a meridional plane for installation in a complementary circumferentially extending slot provided in the blade carrier of a turbo-machine of the axial flow type and wherein said root slot includes a radially inner flank forming part of a cylindrical surface concentric with the axis of the rotor component of the turbo-machine and a radially outer inclined flank forming the inclined surface part of a frustum and which has an optimum minimum allowable angle of inclination α between the corresponding generatrix of the frustum and the rotor axis in order to avoid under-cutting, said method being carried out by a combined side and angle milling cutter wherein $D_{Fr}/2$ represents the radius of the side-milling surface of the cutter which machines the base and radially inner flank of said root slot, R_N represents the radial distance from the axis of the rotor to the

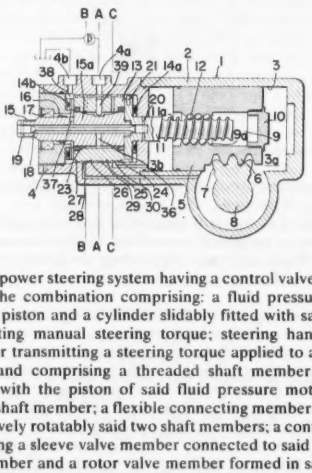


junction between the outer inclined flank machined by the angle-milling surface of said cutter and the base of said root slot, and wherein the said optimum minimum angle of inclination α of said outer inclined flank complies with the formula $\text{Tan } \alpha = D_{Fr}/2R_N$

3,867,870
CONTROL VALVE REACTION DEVICE FOR A POWER STEERING SYSTEM

Yoshiyuki Shimoura, Matsuyama; Hideo Konishi, Yorii-machi, and Hirotetsu Sonoda, Matsuyama, all of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,298
Claims priority, application Japan, July 31, 1972, 47-75857
Int. Cl. F15b *9/10*
U.S. Cl. 91—372 **4 Claims**



1. In a power steering system having a control valve reaction device, the combination comprising: a fluid pressure motor having a piston and a cylinder slidably fitted with said piston for assisting manual steering torque; steering handle shaft means for transmitting a steering torque applied to a steering handle, and comprising a threaded shaft member threadly coupled with the piston of said fluid pressure motor and a steering shaft member; a flexible connecting member connecting relatively rotatably said two shaft members; a control valve comprising a sleeve valve member connected to said threaded shaft member and a rotor valve member formed in said steering shaft member and operating said fluid pressure motor by relative rotary movement of said two shaft members; an annular groove formed in the periphery of said sleeve valve member and connected to an inlet for pressure fluid at the periphery of said sleeve valve member; a plurality of reaction plungers slidably mounted in said sleeve valve member in a common plane with said annular groove such that one end of each plunger is exposed directly to fluid pressure in said annular groove; said rotary valve member having two rotor grooves in fluid communication with said cylinder on respectively opposite sides of said piston such that one or the other of said sides

can be fluid pressurized by relative rotary movement of said rotary valve member and sleeve valve member; different ones of said reaction plungers bearing at their other ends against said rotary valve member in respective ones of said rotor grooves so as to be exposed to the pressures in the respective grooves, whereby the one ends of said reaction plungers are exposed to pressurized inlet fluid and the other ends will be exposed to the pressure prevailing in their respective rotor grooves, and the net thrust force of said reaction plungers will be applied against said rotor valve member to oppose relative rotary movement of said two shaft members.

3,867,871

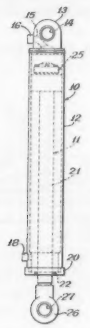
PISTON-TO-ROD DETACHABLE CONNECTION

Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 26, 1973, Ser. No. 354,724

Int. Cl. F16j *1/12*

U.S. Cl. 92—258 **10 Claims**



1. Detachably connected assembly comprising:

a piston rod provided with a piston shoulder, and a shoulder confronting the piston shoulder with a space therebetween, and so spaced apart therefrom as to be in a position more near to the rod end; and

a piston thereon in the space between the shoulders, having carrying means and carrying thereby longitudinally adjustable hold-down means including an endless clamping ring, the plane of which ring being at least in near vicinity to the near shoulder;

said piston, clamping ring, and near shoulder having interposed split locking ring means, said means presenting at least first and second wedging surfaces wedged against the clamping ring and against the near shoulder on respective mating surfaces of the latter so that the active engagement, in response to pressure of adjustment of the hold-down means, wedges said interposed split ring means between the piston and near shoulder to a radially inward locking position locking the piston in compression on the piston shoulder.

3,867,872

PLY-BONDED, EMBOSSED PRODUCT AND APPARATUS

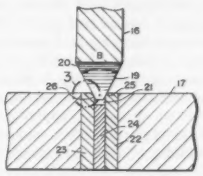
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 294,628, Oct. 3, 1972, Pat. No. 3,834,286. This application Mar. 2, 1973, Ser. No. 337,692

Int. Cl. B31f *5/00*

U.S. Cl. 93—1.1 **2 Claims**

1. In a method of producing a multi ply web especially useful for toilet tissue or toweling, the steps of separately embossing two elongated webs each with a pattern of projections of about 10 to about 200 psi and a height of about 0.01 to about 0.05 inch, orienting said webs so that the projections face each other and interlace with each other so as to provide air spacing in the interlacing, and thereafter subjecting said webs to a pair of transversely-spaced, convergently-related



compressive forces along longitudinally extending lines to cause the plies to bond without application of adhesive.

3,867,873

BAG FORMING MACHINES

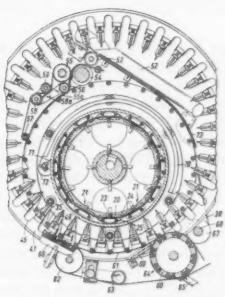
Arthur William Simpson, Hemel Hempstead, and Frank William Pocock, East Harptree, both of England, assignors to Spacials Limited, Bristol, England

Filed Oct. 29, 1973, Ser. No. 410,415

Claims priority, application Great Britain, Oct. 27, 1972, 49536/72

Int. Cl. B31b *1/64*

U.S. Cl. 93—33 H **5 Claims**



1. Apparatus for forming individual heat sealed articles, e.g. tubes or bags, from a strip of two superimposed layers of heat sealable material or of a material coated, or impregnated, with heat sealable material, said apparatus comprising:

a welding device comprising a continuous surface of heat transmitting material;

means to heat said surface; and

means for feeding a strip of material in a zig-zag configuration along a path which extends along at least a part of said continuous surface, said feeding means comprising members supporting said strip at the transverse crests located on both sides of the zig-zag to present the crests on one side of said zig-zag to said continuous surface.

3,867,874

METHOD FOR MAKING PADDED ENVELOPE

Joesph H. O'Neil, Springfield, Mass., assignor to United States Envelope Company, Springfiled, Mass.

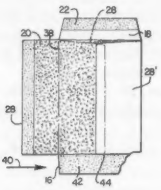
Filed Jan. 28, 1974, Ser. No. 437,601

Int. Cl. B31b *39/00*

U.S. Cl. 93—61 R **3 Claims**

1. A method for making a padded envelope comprising the steps of providing a preprinted envelope blank having a plurality of envelope body defining panels including a front panel, a first side panel integrally connected to said front panel along one side edge of said front panel, and a second side panel integrally connected to said front panel along the other side edge of said front panel, said second side panel having a body

defining portion adjacent said other side of said front panel and a seam defining marginal portion adjacent its free edge, said blank having a bottom flap integrally connected to one of said panels along the bottom edge thereof and a closure flap integrally connected to one of said panels along the top edge thereof, continuously advancing said preprinted blank in one direction, applying a pattern of adhesive to said front panel, said first side panel and said body defining portion of said second side panel while said preprinted blank is continuously advancing in said one direction, applying adhesive to said seam defining marginal portion while said preprinted blank is continuously advancing in said one direction, cutting a patch of foamed plastic material to complement and substantially cover said front panel, said first side panel and said body defining portion of said second side panel, attaching said patch to said preprinted blank by said pattern of adhesive to substantially cover one surface of said front panel, said first



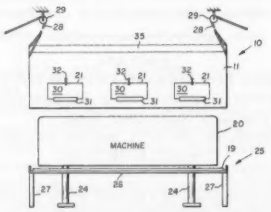
side panel, and said body defining portion of said second side panel while said preprinted blank is continuously advancing in said one direction, folding said first side panel with said patch attached thereto inwardly along said one side edge and toward said second side panel while said preprinted blank is continuously advancing in said one direction, folding said second side panel with said patch attached thereto inwardly along said other side edge and toward first side panel to bring the opposite side edges of said patch into abutting engagement, adhering said seam defining portion to an associated marginal portion of said one side panel while said preprinted blank is continuously advancing in said one direction, advancing said preprinted blank in another direction, applying adhesive to said bottom flap, folding said bottom flap inwardly along said bottom edge and adhering it to said first and said second side panels while said preprinted blank is advancing in said other direction, and applying adhesive to said closure flap.

3,867,875

MACHINE NOISE REDUCTION METHOD

Robert J. Hesselein, Fayetteville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,014
Int. Cl. B31b *49/02*
U.S. Cl. 93—36 M **6 Claims**



1. A machine noise reduction method comprising:

a. forming a packaging carton of corrugated cardboard for fitting around and enclosing said machine, said carton being suitable for use in shipping said machine;

b. securing noise absorbing material to the walls of said carton so said carton walls support said noise absorbing material;

c. marking on the outside of said carton walls the location of prospective access openings to said machine;

d. using said carton for packaging and shipping said machine if required;

e. cutting pieces out of said noise-absorbing walls to form said access openings;

f. placing said carton over said machine at a work location; and

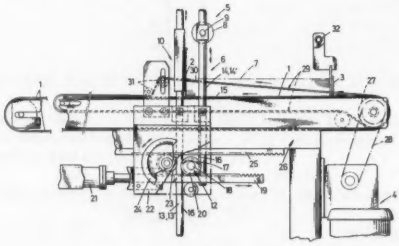
g. using said cut out pieces of said carton wall for normally closing said access openings.

3,867,876

STACKING DEVICE

Edouard Louis Van de Gent, Meise, Belgium, assignor to Printex, Neder-Over-Heem, Belgium

Filed Sept. 15, 1972, Ser. No. 289,620
Claims Priority, application Belgium, Sept. 15, 1971, 772622
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 DP **14 Claims**



1. A device to be arranged at the outlet of a bag-shaping machine for allowing the formation of a bag stack and the removal of the formed bag stack, said device comprising and endless conveying belt on which the bags are stacked, belt control means to impart to said belt an intermittent movement through, a bag stack measuring device, a stop extending crosswise to the belt movement direction and against which the bag stack is formed, and stop control means synchronized with the belt control means for imparting to the stop an alternating motion so as to release the formed bag stack and allow the removal thereof by said belt, bearing means so arranged as to bear on the upper side of the bag stack when said stack is formed, and when said stop control means releases the formed bag stack, bearing control means being provided to impart to said bearing means an alternating motion to move same towards and away from said upper side, said bearing means being so arranged that the part thereof engaging the bag stack upper side moves with the same linear speed as the endless belt and along the same direction as said belt to prevent spreading of the bag stack on said belt.

3,867,877

SPIT BASKET AND SUPPORT THEREFOR

Ludwig J. Zajc, 3262 Royalton Rd., North Royalton, Ohio 44124

Filed Nov. 8, 1973, Ser. No. 413,769
Int. Cl. A47j *37/08*
U.S. Cl. 99—402 **11 Claims**

1. A spit basket for a barbecue grill comprising:

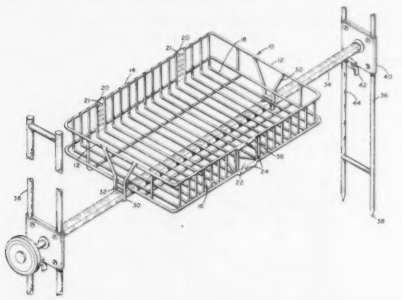
an open top tray having a bottom and an elevational side wall or walls extending upwardly from said bottom providing substantially continuous periphery and thereby establishing a receptacle for food;

a top closure panel within said tray fitting between said wall or walls;

said tray and said closure panel having a grid-like wire construction;

said closure panel having one or more projections extending beyond the general periphery thereof;

one or more elongated brackets secured to said side wall or walls, each bracket having a plurality of vertically substantially aligned openings adapted for receiving one said projection for pivotably securing one end of said closure panel at a predetermined elevation within the tray;



a helical coil elevation and tension adjusting member rotatably secured generally within the side wall at a location generally opposed to said bracket(s), said coil having a plurality of loops projecting into the tray with the axis of elongation of the coil being substantially parallel to the plane of the side wall, said adjusting member being effective upon rotation thereof to carry the closure panel on the top loop and upon further rotation to force said panel downward between loops until the desired panel elevation and bias has been reached.

3,867,878
METHOD OF APPLYING STRAPPING MATERIAL TO ROUND PACKAGES OR THE LIKE

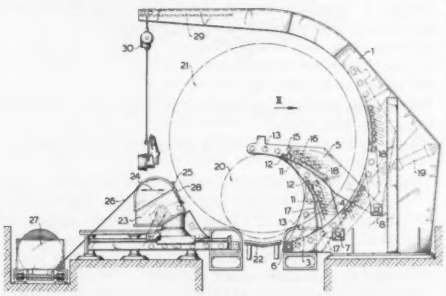
Gerd Buhne, Schwelm, Germany, assignor to Titan Verpackungs System GmbH, Schwelm, Germany

Filed Feb. 26, 1973, Ser. No. 335,828

Claims priority, application Germany, Feb. 26, 1972, 2209120

Int. Cl. B65b *13/04*

U.S. Cl. 100—2 **2 Claims**



1. A method of strapping round packages of various diameters by means of a strap guided in strap guiding means, which includes in combination the step of: withdrawing a first strap section from a strap supply roll, advancing said strap section only into a portion of said strap guiding means, adapting the path for the strap in the strap guiding means to the circular contour of the package to be strapped, thereafter advancing the strap section withdrawn from the strap supply roll further through the adapted path of said strap guiding means so as to pass said strap completely around the package to be strapped, tightening the strap around the respective package, and locking said strap on the package to be strapped.

3,867,879
HOISTING ARRANGEMENT FOR ROLLERS

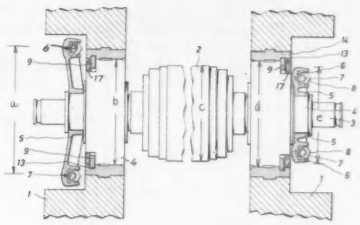
Jurgen Schlunke, Krefeld, and Heinz Boixen, Huls, Krefeld, both of Germany, assignors to Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung, Krefeld, Germany

Continuation-in-part of Ser. No. 188,309, Oct. 12, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,593

Claims priority, application Germany, Oct. 10, 1970, 2049874

Int. Cl. B30b *3/04*

U.S. Cl. 100—162 **2 Claims**



1. In combination with a closed calender stand: a plurality of rollers normally vertically superimposed upon each other so that each roller forms a bit with the respective adjacent roller, bearing means arranged at the end portions of each of said rollers for journalling the same, housing means supported by said stand and respectively supporting said bearing means, each of said housing means having two arms extending in opposite directions with regard to each other, two pairs of adjusting spindles respectively associated with opposite ends of said rollers, each of said arms of each of said housing means having its outer end portion provided with a cut-out all open toward the same direction for receiving one of said adjusting spindles and allowing the latter vertically to pass therethrough, a plurality of nuts respectively adjustably arranged on said spindles, one nut each being arranged below and being associated with one of said arms and being adjustable relative thereto, the spacing between the spindles of one of said pairs of spindles being greater than roller diameter such as clearly to permit withdrawal and insertion of said rollers individually in the direction of their longitudinal axes with the pertaining bearing means between the spindles of said last mentioned pair of spindles, one of said arms being smaller and also passing through space between the spindles along with both the roller and bearing means.

3,867,880
TRASH COMPACTOR

Joseph F. Bourgeois, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

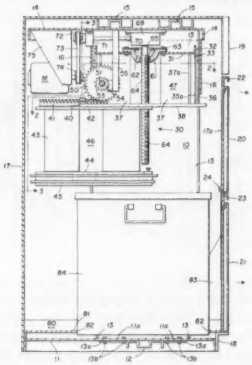
Filed June 18, 1973, Ser. No. 370,610

Int. Cl. B30b *1/18, 7/00, 15/06*

U.S. Cl. 100—226 **5 Claims**

1. In a trash compactor having a cabinet containing a chassis, a trash container and a ram assembly including a ram head, the ram assembly being linearly movable relative to the chassis in a compacting stroke from a withdrawn position above the trash container, the trash container being disposable in aligned relation closely below the ram head, downwardly to a compacting position inside the container and then in a withdrawal stroke back to its withdrawn position, the improvement wherein the ram assembly includes an upper portion and a lower portion to which the ram head is attached,

the lower ram portion being laterally movable within the confines of the cabinet relative to the upper ram portion and the container into and out of said alignment with the container when the ram head is above the container effective to expose the mouth of the container for deposit of trash therein through an access opening in the cabinet; and wherein said lateral movement is achieved by transfer means which automatically moves the lower ram portion out of said alignment near the



end of the ram assembly's withdrawal stroke and moves the lower ram portion back into said alignment at the beginning of the ram assembly's compacting stroke when the ram head is above the container in each case, the transfer means being activated by said linear movement of the ram assembly and comprising driven means carried by the upper and lower ram portions and drive means carried by the chassis and operative upon the driven means only during said linear movement of the ram assembly when the ram head is above the container.

3,867,881

METHOD AND APPARATUS FOR PRINTING ON WORKPIECES WITH AN OUTER SURFACE HAVING THE FORM OF A TRUNCATED CONE

Kurt Blattner, Dietikon, Switzerland, assignor to MADAG Maschinen- und Apparatebau Dietikon AG, Dietikon, Switzerland

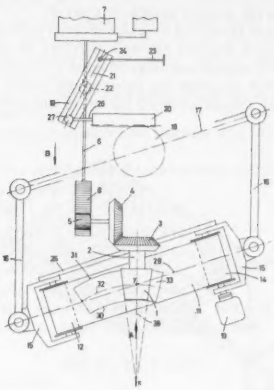
Filed June 8, 1973, Ser. No. 368,255

Claims priority, application Switzerland, June 14, 1972, 8861/72

Int. Cl. B41f *17/28*

U.S. Cl. 101—7 **10 Claims**

1. A method for printing on an object having a conical outer surface comprising the steps of providing an object having a conical outer surface, providing a printing block having a corresponding conical outer surface, providing an elongated printing tape, rotating one of said object and said printing block about its geometric axis in driving engagement with the other with the printing tape engaged therebetween to move said printing tape in a first direction parallel to its length, and imparting a pivoting movement to said printing tape in a direction at an angle to said first direction about an imaginary



axis perpendicular to its surface passing through the printing block.

3,867,882

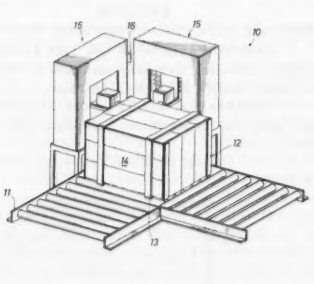
APPARATUS FOR PRINTING LABELS DIRECTLY ONTO PACKAGES, CONTAINERS AND THE LIKE

Erick L. Ahlgren; Arthur H. McMorris, and Joseph L. Schweppe, all of Houston, Tex., assignors to Houston Engineering Research Corporation, Houston, Tex.

Filed Apr. 19, 1973, Ser. No. 352,570

Int. Cl. B41f *17/24*; **G01d** *15/18*

U.S. Cl. 101—35 **19 Claims**



1. A label printing apparatus for printing a label directly on a package, comprising:

probe means for finding the package on which a label is to be placed;

said probe means being movable relative to such a package to find a side thereof and including means forming a signal indicative of finding a side of the package, and means contacting the package during printing;

print head means including means for applying ink for forming characters which comprise a portion of a label; means for moving said print head means and said probe means in a specified pattern relative to the side of the package to enable said print head means to form the label on the package, said means for moving further including means responsive to said means contacting the package to control inward and outward movement of said print head means with respect to the package during printing; and

control means for providing print signals to said print head means indicating the label to be printed and driving sig-

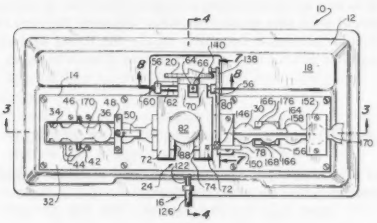
nals to said means for moving to control movement of said print head means with respect to the package.

3,867,883

STRIP LABEL PRINTER

James D. Styers, 5132 W. Geddie Cir., Littleton, Colo. 80123, and Paul H. Styers, 3984 S. Pinehurst Cir., Denver, Colo. 80235

Filed Apr. 16, 1973, Ser. No. 351,802
Int. Cl. B41l *13/02, 27/26*
U.S. Cl. 101—125 15 Claims



1. The printing press for imprinting a plurality of labels joined together to form a chain by relatively narrower connecting portions which comprises: a base defining an upwardly facing supporting surface; a printing head adapted to carry an indicia transfer medium on the undersidde thereof mounted for rockable movement about an axis paralleling the supporting surface be'ween an extended operative position in face-to-face contact with the latter and a retracted inoperative position raised thereabove; strip storage means located at one side of the printing head adapted to hold a supply of the labels in strip form; strip-advancing means carried by the base on the opposite side of the printing head from the strip storage means, said strip-advancing means including a shuttle mounted for reciprocal movement between an extended and a retracted position underneath the label strip as it leaves the printing head, said shuttle having a pair of transversely-spaced upstanding projections positioned and adapted to engage the trailing corners of each label alongside the connecting portion and advance same upon movement thereof from retracted into extended position; and, drive means connected to the printing head and strip-advancing means operative upon actuation to alternately shift the printing head and strip advancing means between their extended and retracted positions, said drive means including a rotatable drive shaft, cam-carrying means and crank-forming means mounted on said drive shaft for conjoint rotation therewith, link means interconnecting said crank-forming means and shuttle operative upon rotation of the shaft to reciprocate the latter, means comprising a bell crank mounted for independent rockable movement about said axis intermediate its ends interconnecting the cam-carrying disc and printing head, said bell crank being operative in rsponse to rotation of said cam-carrying disc to intermittently advance said printing head into its extended operative position whenever said strip-advancing means is retracting the shuttle; and, yieldable biasing means normally urging said printing head into retracted position while cooperating therewith to hold said bell crank against the cam-carrying disc.

3,867,884

EXPLOSIVE FUSE-CORD

Michael Anthony Langrish-Smith, Barnet, England, and Daniel Steele, Stevenston, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 28, 1974, Ser. No. 437,385
Int. Cl. C0bc *5/00*
U.S. Cl. 102—27 R 10 Claims

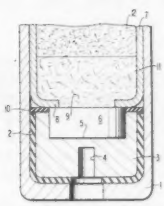
1. An explosive fuse-cord comprising an inner explosive core and an outer waterproofing sheath of a copolymer of ethylene and vinyl acetate containing from 7 to 30 percent by weight of the latter.

3,867,885

ELECTRICAL PRIMER

Heinz Gawlick, Furth; Hellmut Bendler, Nurnberg, and Uwe Brede, Schwaig, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 12, 1973, Ser. No. 396,438
Claims priority, application Germany, Sept. 15, 1972, 2245308
Int. Cl. F42b *19/12*
U.S. Cl. 102—28 R 20 Claims



1. An electrical primer comprising an electrically conductive housing, a pole piece disposed within said housing and accessible from outside of said housing, plated element means disposed within said housing and having an ignition bridge on one surface thereof, an inner casing means disposed within said housing, said plated element means and said inner casing means being arranged in said housing such that said pole piece is electrically conductively connected to said housing via said plated element means and said inner casing means, and at least one ignitable charge being disposed within said housing in operative relation with said ignition bridge for ignition thereby, said pole piece including cup-shaped recess means in the end portion thereof facing said at least one ignitable charge, said plated element means being arranged in said recess means such that at least a bottom surface of said plated element means rests on and is in electrically conductive contact with said pole piece.

3,867,886

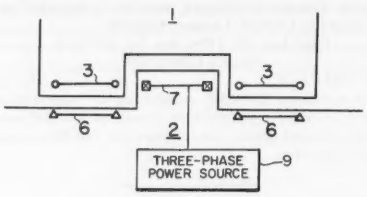
APPARATUS FOR LEVITATING AND STABILIZING A VEHICLE DRIVEN BY A LINEAR MOTOR

Naoki Maki, Ibaraki-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,405
Claims priority, application Japan, June 15, 1972, 47-59688
Int. Cl. B61b *13/08*
U.S. Cl. 104—148 SS 4 Claims

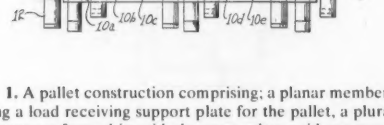
1. An apparatus for levitating and stabilizing a vehicle driven by a linear motor, comprising ground windings disposed horizontally on the ground including a stabilizing winding and levitating windings; and super-conducting windings mounted on said vehicle, opposite to said levitating windings

and on both sides of said stabilizing winding and substantially in the same horizontal plane as contains said stabilizing winding; whereby vehicle is levitated and stabilized by means of said windings.



3,867,887
PALLET STRUCTURE AND METHOD OF FORMING THE SAME

William R. Saidel, 333 Taft Dr., Flossmoor, Ill. 60473
Continuation-in-part of Ser. No. 239,682, March 30, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,615
Int. Cl. B65d *19/00, 19/44*
U.S. Cl. 108—55 **9 Claims**



1. A pallet construction comprising; a planar member forming a load receiving support plate for the pallet, a plurality of apertures formed in said planar member, said apertures positioned in said planar member to be in a first predetermined pattern and to be predetermined distances from one another substantially throughout the entire central portion thereof and presenting a plurality of apertures within and adjacent the periphery of the planar member in a predetermined generally peripheral pattern and leaving discrete imperforate portions adjacent the periphery of the planar member, a plurality of legs secured to said planar member at the said imperforate portions in a second predetermined pattern and extending from one surface thereof, said plurality of legs positioned on said planar member in said second predetermined pattern with certain apertures in the generally peripheral pattern spaced in accordance with the spacing of certain legs allowing said pallet construction to nest with an associated similarly shaped pallet construction with said plurality of legs mating with and inserted into selected aperatures in said peripheral pattern of said associated similarly shaped pallet construction and with said planar member offset with respect to the planar member of said associated similarly shaped pallet construction, said planar member and the planar member of said associated similarly shaped pallet construction being in surface contact with one another when the pallet constructions are stacked together with all the legs projecting in the same direction from surface contacting planar members.

3,867,888
RUG HOOKING NEEDLE

Bernard Morissette, Hyacinthe, Quebec, Canada, assignor to Phentex Inc., St. Hyacinthe, Quebec, Canada
Filed July 13, 1973, Ser. No. 378,936
Int. Cl. D05c *15/06*
U.S. Cl. 112—80 **7 Claims**

1. A hooking needle comprising: an elongated bar having a handle attached at one end thereof; a needle member fixed to the opposite forward end of said bar; said needle member defining an open-ended enclosure having a yarn-receiving passage and a looper-receiving passage extending longitudinally therethrough, said needle member including a fabric-penetrating portion frontwardly extending in the longitudinal axis of said bar; a shuttle member mounted to said bar for reciprocating movement thereon between said handle and said needle member; an elongated looper member having one end attached to said shuttle member and the opposite forward end slidably received in said looper-receiving passage of said needle member; a presser member slidably mounted to said elongated bar and extending longitudinally thereof, said presser member having a forward portion adapted to rest against the fabric to be hooked; and means for adjusting the relative position of said presser member to said bar and to said shuttle member to thereby vary the relative position of said forward end of said presser member to said forward end of said looper member whereby the penetration of the yarn in the fabric may be varied, including a coupling member in abutting engagement with said presser member adjacent the rear end thereof; and releasable fastening means for fixing said coupling member to said rear portion of said presser member.

3,867,889
APPARATUS FOR SEAMING PIECES OF TEXTILE FABRIC OF THE LIKE

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Mass.
Filed Aug. 3, 1973, Ser. No. 385,349
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 **27 Claims**

1. In apparatus for joining two pieces of material such as textile fabric, said apparatus comprising means for seaming the two pieces together and means for feeding the two pieces through the seaming means comprising a first feed device for one of said pieces and a second feed device for the other, the improvement comprising the provision of:

means for sensing an out-of-registration condition of the trailing end of one of said pieces relative to the trailing end of the other piece as said pieces are fed through the seaming means;

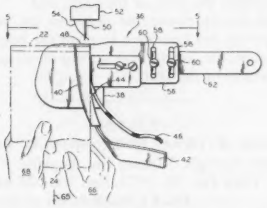
means for varying the relative speed of the two feed devices; and

means responsive to the sensing means for controlling the speed-varying means to bring the trailing ends of the pieces substantially into registration one with the other.

3,867,890
METHOD OF STITCHING A CORDED SEAM

Lillie Hamilton, 1034 W. 92 Pl., and Lorretta McCrey, 8714 S. Sangamon, both of Chicago, Ill. 60620

Filed Nov. 26, 1973, Ser. No. 419,112
Int. Cl. D05b *35/06*
U.S. Cl. 112—139 **4 Claims**



1. In a method of stitching a corded upholstery seam in an automatic sewing device, the steps of:

surrounding a core element with a piece of material whereby the ends of said material extend adjacent one another and away from said core element;

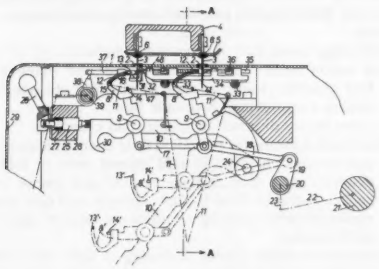
locating one end of a first material panel along one of said ends of said piece of material adjacent said core element; locating one end of a second material panel along the other of said ends of said piece of material adjacent said core element, and

stitching said piece of material and said material panels together on a common seam in said automatic sewing device while applying an equal amount of tension pressure to each of said material panels.

3,867,891
MULTI-NEEDLE DOUBLE CHAIN-STITCH QUILTING MACHINE

Gerhard Grabher, Lustenau, Austria, assignor to Oehler AG, Au, Switzerland

Filed Dec. 26, 1972, Ser. No. 318,542
Int. Cl. D05b *1/10, 61/00*
U.S. Cl. 112—166 **7 Claims**

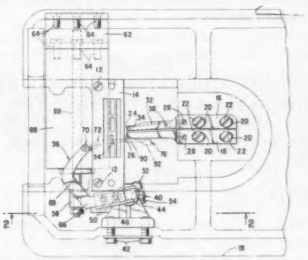


1. A multiple needle double chain-stitch quilting machine comprising a needle plate having a plurality of transversely aligned openings therethrough, a plurality of needles each adapted to receive an upper thread therethrough and in piercing relationship with a corresponding needle plate opening, a plurality of grippers pivotally mounted below the needle plate, each one of said grippers cooperating with a corresponding needle, each gripper provided with a curved thread supplying finger adapted to receive a lower thread, means for oscillating said grippers about a transverse axis parallel to the needle plate and in close proximity to the axis of the corresponding needle, each of said thread supplying fingers being adapted to engage a loop formed by said upper thread as the corresponding needle ascends, a plurality of spreaders positioned below the needle plate, each cooperating with a corresponding needle and gripper, a first means for moving said spreaders in a direction parallel to the axis of oscillation of said grippers such that, during the descent of the corresponding needle toward the thread supplying finger, the spreader deflects a section of the lower thread extending between the point of emergence of said lower thread from said finger and a point where the lower thread, on the underside of an item to be quilted, is retained by the said loop of the upper thread, which loop was produced during the previous ascending stroke of the needle and engaged by said finger, in the direction of the axis of oscillation of the gripper toward the side of the needle axis remote from said finger, so as to position said lower thread section to permit the descending needle to pass between the lower thread section and the said loop of the upper thread engaged by the finger of said gripper, and cooperating with said first moving means, a second means for moving each spreader transversely of the axis of oscillation of said grippers for deflecting said lower thread section generally toward the needle axis, whereby said quilting machine is enabled to stitch in either direction transversely of the direction motion of said gripper as well as in the direction of motion thereof.

3,867,892
UNDERBED THREAD TRIMMER FOR CHAINSTITCH SEWING MACHINES

Heinrich Ciecior, Ettlingen, and Rolf E. Kessler, Karlsruhe, both of Germany, assignors to The Singer Company, New York, N.Y.

Filed May 9, 1974, Ser. No. 468,630
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 **10 Claims**

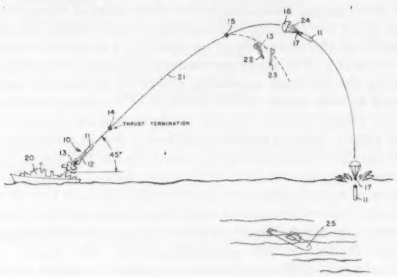


1. An underbed thread trimmer for a chainstitch sewing machine, comprising a pair of ledger blades adjustably mounted on the bed of the machine, a thread catcher pivotably mounted on said bed having needle thread and looper thread engaging means and cutting edges cooperable with respective ones of said ledger blades, means for effecting cyclical pivotal movement of said thread catcher from an at rest position on one side of the sewing machine needle to a position on the other side of said needle where said needle and looper threads are engaged and transported in the same general direction to said ledger blades for cutting, thread retaining means being provided in association with one of said ledger blades for retaining a predetermined length of looper thread subsequent to cutting.

3,867,893
ROCKET-THROWN MISSILE

Orville J. Saholt, China Lake, and Donald Stoehr, Lancaster, both of Calif., assignors to The United States of America, as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1960, Ser. No. 8,201
Int. Cl. F42b *15/22*
U.S. Cl. 114—20 R **7 Claims**

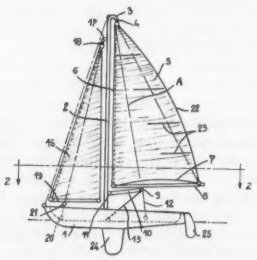


1. An anti-submarine weapon comprising, in combination: a payload apparatus effective to operate offensively against a target submarine when delivered to a suspect target area; airframe separably joined to said payload apparatus; propulsion means carried by said airframe and operative to generate thrust to project said weapon into a ballistic airflight trajectory, said propulsion means having a characteristic maximum period of thrust generation; means including a first pre-settable control apparatus for effecting thrust termination at a first instant prior to expiration of asid characteristic maximum period; means including a second pre-settable control apparatus for effecting separation and jettisoning of the airframe from said payload apparatus at a preselected later instant during ballistic airflight of said weapon; deceleration apparatus separably secured to said payload apparatus and arranged to become operative during separation and jettisoning of the airframe; and inches +means operative to effect jettisoning of said deceleration apparatus upon water-entry of said payload apparatus.

3,867,894
BOATS AND OTHER DEVICES DRIVEN BY A SAIL

Pierre Georges Vicard, 15, Cours Eugenie, Lyon, France

Filed Sept. 4, 1973, Ser. No. 394,098
Claims priority, application France, Sept. 15, 1972, 72.33383
Int. Cl. B63h *9/04*
U.S. Cl. 114—102 **4 Claims**



1. An improved sail arrangement for sailing craft having a mast, comprising:

a sail having a leading edge extending substantially upwardly and having a lower edge extending approximately horizontally, the upper end of the sail being pivotally supported in the vicinity of the head of the mast,

a yard underlying said lower edge of the sail and attached thereto at least at the leading and trailing corners of the sail,

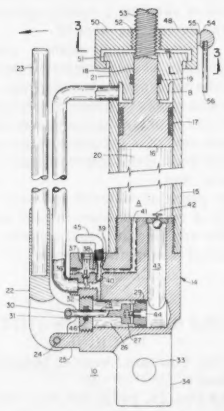
a boom pivotally supported at its forward end near the base of the mast below the yard, and the boom being connected near its other end to the yard at a pivot point intermediate the ends of the yard, and

downhaul means connected between the boom and the sailing craft and operative to pivot the boom through an angle about the mast to selectively move said pivot point transversely of the craft.

3,867,895
INTEGRAL HYDRAULIC TENSIONING ASSEMBLY

Robert Larry Ameigh, 5 Duane Ln., Bayville, N.Y. 11709

Filed Jan. 22, 1973, Ser. No. 325,648
Int. Cl. B63h *9/08*
U.S. Cl. 114—109 **4 Claims**



1. An integral hydraulic tensioning assembly for applying a tensioning force to an operated member in response to a hydraulic force applied to a displaceable piston means comprising:

a housing having first and second chambers;

said piston means defining first and second zones in said first chamber, said first zone of said first chamber comprising a reservoir of hydraulic fluid;

a pump means disposed in said second chamber;

first conduit means for providing fluid communication from said second chamber to said second zone of said first chamber such that displacement of said piston means causes hydraulic fluid to flow through said first conduit means thereby applying a tensioning force to said operated member;

a second conduit means including a first valve means formed in said housing to permit hydraulic fluid to flow from said second chamber to said first zone of said first chamber should the hydraulic pressure exceed a predetermined pressure of said first valve means;

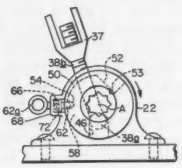
second valve means disposed in said second conduit means to permit hydraulic fluid to selectively flow from said second zone to said first zone of said first chamber; and

a selectively engageable locking means for preventing relative motion between said housing and said operated member, said locking means includes a split locking nut assembly and a cam means, said cam means being mounted for revolution on said lock nut device such that revolution of said cam means selectively engages and disengages said split locking nut assembly.

3,867,896
ROTARY STAY RELEASE

Carl Alan Merry, Marion, Mass., assignor to Schaefer Marine Products, New Bedford, Mass.

Filed June 8, 1973, Ser. No. 368,013
Int. Cl. B63h *9/08*
U.S. Cl. 114—109 3 Claims



1. A stay release for anchoring and tensioning a stay wire on a boat comprising

A. a housing whose inside volume is generally cylindrical in shape,

B. a generally cylindrical drum whose diameter is slightly less than the diameter of the inside volume of the housing, said drum being mounted inside the housing for rotation about its axis,

C. an abutment on the drum,

D. a channel extending from the abutment diametrically through the drum,

E. a circumferential slot in the top wall of the housing, said slot being aligned with the channel in the drum so that an elongated rigid fixture can be inserted through the housing to engage the abutment, and the drum can be rotated about its axis so that the abutment is moved from an upper position to a lower position within the housing with the fixture extending through the channel and projecting out of the slot,

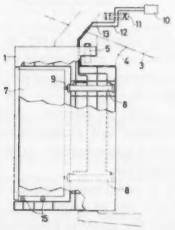
F. means for rotating the drum around its axis between its two positions, and

G. means for stopping the drum in its lower position.

3,867,897
RUDDER FOR SHIP

Osami Yamamoto, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Sept. 10, 1973, Ser. No. 395,987
Int. Cl. B63h *25/06*
U.S. Cl. 114—167 2 Claims

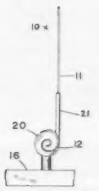


1. A vertically-disposed rudder for a ship, comprising a main rudder portion having bearing means secured thereto, and an auxiliary rudder portion horizontally and rearwardly extensible from and retractable into said main rudder portion by translational motion on said bearing means to vary the effective rudder area without substantially changing the vertical depth to which said rudder extends, and remotely-controllable positioning means in said main rudder portion for controllably extending and retracting said auxiliary rudder portion translationally with respect to said main rudder portion independently of the speed of the ship carrying said rudder.

3,867,898
DETACHABLY MOUNTABLE VISUAL PROXIMITY AND ALIGNMENT INDICATOR FOR CONNECTABLE VEHICLES

Ernest A. Lakamp, 431 South Shore Dr., Forest Lake, Minn. 55025

Filed Nov. 21, 1973, Ser. No. 417,975
Int. Cl. B60q *1/30*
U.S. Cl. 116—28 R 1 Claim



1. A set of visual indicators for mounting on a towable unit and an operator driven vehicle having a ball hitch of predetermined diameter comprising:

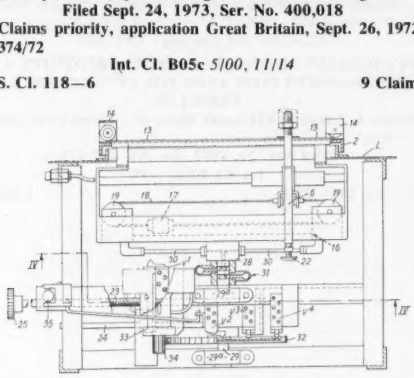
a first indicator for mounting on an operator driven vehicle having a ball hitch of predetermined diameter which cannot be seen when the operator is in the driver's seat of the vehicle and a second visual indicator for mounting on a towable unit which is to be attached to the hitch located on the operator driven vehicle;

said first visual indicator including a first section having pressure mounting means adaptable for detachably mounting on the ball hitch of a vehicle, said pressure mounting means comprising a resilient helical coil section adaptable for mounting contiguously on a ball hitch throughout the extent of said helical coil section, said helical coil section having a diameter less than the predetermined diameter of the ball hitch, said first visual indicator adapted to extend tangentially from the ball hitch to thereby allow the hitch on the towable unit to extend over the ball without disturbing said first visual indicator, said first visual indicator adapted to extend from the ball hitch of the vehicle a sufficient distance so as to enable the operator to see at least a portion of the visual indicator from the operator's seat of the operator driven vehicle, said first visual indicator having sufficient rigidity so as not to sway when an operator driven vehicle is moved to thereby provide a visual indicator to the operator of the vehicle as to the position of a ball hitch on an operator driven vehicle, said second visual indicator having pressure mounting means for detachably mounting to the flange of a hitch of the towable unit, said pressure mounting means comprising a resilient coil spring for wedging on the flange of the towable unit, a portion of said second visual indicator adapted to extend upward from the towable unit sufficient distance so that at least a portion of said second visual indicator can also be seen by an operator sitting in the operator's seat of a vehicle, said first visual indicator and said second visual indicator coacting to thereby provide the operator of a vehicle with the relative position of a bumper hitch and a towable vehicle so that the operator can align the hitch of a vehicle with the hitch of the towable unit.

3,867,899
AUTOMATIC SPRAYING MACHINES

Ronald True, Leicester, England, assignor to True Brothers Conveyors Ltd., Queniborough, Leicestershire, England

Filed Sept. 24, 1973, Ser. No. 400,018
Claims priority, application Great Britain, Sept. 26, 1972, 44374/72
Int. Cl. B05c *5/00, 11/14*
U.S. Cl. 118—6 **9 Claims**

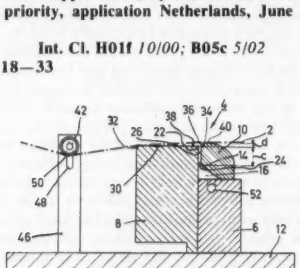


1. An automatic spraying machine comprising: a stationary spraying device; a table which is turnable with respect to said device; a support for a component to be sprayed, the support being carried by a rod which projects upwardly through a diametral slot in the table, and is connected, below the latter, to a piston and cylinder unit carried by the table and arranged to traverse the rod along the slot for movement of the support in a linear path across the table; and drive means for the table and for the support, whereby, in use, a component to be sprayed can be moved past the spraying device linearly by movement of the support and in an arcuate path by turning the table.

3,867,900
DEVICE FOR COATING A SYNTHETIC RESIN BASE WITH A LAYER OF LACQUER

Gerard Willem Van Osterhout; Vhendrikus Johannes Lemmen, and Cornelis Johannes Klomp, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 171,395, Aug. 12, 1971, abandoned, which is a division of Ser. No. 24,674, April 1, 1970, Pat. No. 3,679,476. This application July 17, 1973, Ser. No. 380,088
Claims priority, application Netherlands, June 13, 1969, 6909118
Int. Cl. H01f *10/00;* **B05c** *5/02*
U.S. Cl. 118—33 **1 Claim**

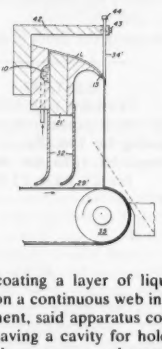


1. A device for use in coating a support base of synthetic resin material with a layer of lacquer containing a binder, a solvent and magnetic particles to thereby form a magnetic tape comprising a nozzle for depositing the layer of lacquer on the support base, means for causing said support base to be passed over said nozzle so that said layer of lacquer is deposited thereon, means for drying the lacquer after deposition thereof on said support base, means for causing said support base to be continuously moved over the nozzle, and means for controlling the tensile stresses in said support base, said nozzle comprising means forming a pressure chamber for storing said lacquer in contact with said moving support base including a frame, a smoothing block and a supply block mounted on said frame, and a supporting block mounted on said supply block, said supporting and smoothing blocks having parallel boundary walls forming a pouring slit therebetween, said walls and said slit being arranged transverse to the direction of movement of the support base travelling over the nozzle, a lug attached to said supporting block which is located on the supply side of said pouring slit for guiding the support base over said slit, said smoothing block having a flat smoothing table arranged at right angles to said pouring slit and a smoothing side located at the end of said smoothing table remote from said slit, means for determining the angle formed by the parts of the support base approaching and leaving the smoothing side for equalizing the layer of lacquer deposits on the support base, said support base being guided from said lug past said pressure chamber at an angle to said smoothing table, said pressure chamber having a triangular cross-section being bounded on one side by said lug, on another side by said smoothing table and on the third side by said moving support base, the ends of said chamber being open, and means for supplying and forcing lacquer through said pouring slit into said pressure chamber where it is temporarily stored under pressure in contact with said moving support base so as to be coated thereon.

3,867,901
APPARATUS FOR PRODUCTION OF PHOTOGRAPHIC ELEMENTS

Jack F. Greiller, Ruislip, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 24,457, March 16, 1970, abandoned, which is a division of Ser. No. 733,944, June 3, 1968, Pat. No. 3,632,374. This application Sept. 22, 1972, Ser. No. 291,440
Int. Cl. B05c *5/00*
U.S. Cl. 118—50 **8 Claims**



1. Apparatus for coating a layer of liquid photographic coating composition on a continuous web in the manufacture of a photograhic element, said apparatus comprising:

a coating hopper having a cavity for holding said coating composition and a narrow ,elongated horizontally-disposed discharge slot communicating with said cavity for discharging a substantially uniform thin layer of said coating composition,

means defining a continuous inclined slide surface which adjoins said slot and is disposed to receive on the upper surface thereof the coating composition discharged from said slot and which extends downwardly to a lip; whereby the coating composition discharged from said slot flows by gravity down said slide surface, where it is distributed by the action of gravity to provide exact thickness uniformity across the flowing layer, and over said lip to form a vertical free-falling curtain of coating composition having exact thickness uniformity,

guide means defining edge guide surfaces adjacent each edge of the path of said free-falling curtain for engaging the edges of said curtain to establish the curtain width,

said guide means comprising a pair of rods each vertically mounted with the upper end adjacent said lip and the lower end terminating above the plane along which said web is moved and resilient extensions on the lower end of each rod for engaging said web,

means for moving said web along a predetermined path spaced below and transversely of said lip to intercept the free-falling curtain and form on said web a layer of said coating composition, and

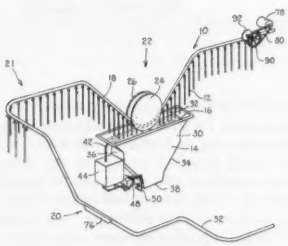
shield means depending downwardly from said coating hopper upstream of said free-falling curtain and extending to a position above but closely adjacent the plane along which said web is moved, for protecting said free-falling curtain from air currents and reducing the resistance of the barrier layer of air on the moving web to penetration by said free-falling curtain.

3,867,902

APPARATUS FOR APPLYING PROTECTIVE COATING TO PICKER STICKS

James Earle Huffman, 42 Stone Haven Dr., Greenville, S.C. 29607

Filed Apr. 8, 1974, Ser. No. 458,757
Int. Cl. B05c *3/10*
U.S. Cl. 118—423 **5 Claims**



1. An apparatus for automatically applying a protective coating on elongated picker sticks comprising:

a. a conveyor means for transporting said picker sticks in succession,

b. a tank having an open top,

c. a lacquer solution carried in said tank,

d. said conveyor means having a run closely adjacent said open top of said tank,

e. pivotal clamping means carried in succession by said conveyor means,

f. said elongated picker sticks being carried by said pivotal clamping means,

g. means for driving said conveyor means for immersing said picker sticks in succession in said laquer solution carried in said tank,

h. horizontally disposed flange means extending from opposed sides of each said clamping means transversely to the direction of conveyor movement,

i. a pair of vertically extending and horizontally aligned rotatable disks straddling said conveyor and operatively associated with said tank and said flange means at said run, and

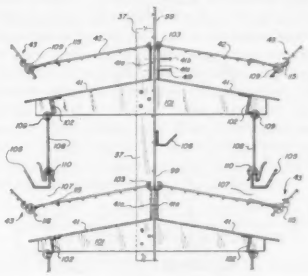
j. means guiding said conveyor through said run whereby said flange means pass beneath and in contact with said disks whereby to maintain said clamp and picker stick therewith in a vertical position in said lacquer solution. lacquer solution.

3,867,903

EGG LAYER SYSTEM

Roger L. Fleshman, 103 60 W. 74th Pl., Arvada, Colo. 80005

Filed Sept. 11, 1973, Ser. No. 396,292
Int. Cl. A01k *31/16*
U.S. Cl. 119—17 **10 Claims**



1. A poultry cage assembly having a plurality of vertically stacked tiers and arranged in an elongated row, said cage assembly comprising:

a. a plurality of vertical support columns spacedly arranged in a single longitudinal row,

b. a continuous curtain wall means extending along one side of said row of columns and secured to said columns, said wall means being formed from sheet material and arranged to substantially cover the vertical height of said row of columns,

c. cage support means having a plurality of horizontally disposed cross arms arranged to extend outwardly from said columns and normal to the plane of said curtain wall means, said cross arms being vertically spaced and secured to said support columns whereby the arms are horizontally aligned with corresponding arms to form horizontal tiers,

d. said cage support means further including cage hanger bars interconnecting the outer edges of the horizontally aligned cross arms,

e. cover means including a continuous sheet of solid material attached to the upper surfaces of said cross arms and hanger bars and arranged to extend the full length of said column row,

f. floor means being formed from open mesh wire fabric and arranged to extend the full length of said column row, said floor means being attached to said curtain wall means and said hanger bar means so as to be tilted downwardly from said curtain wall means so that eggs laid upon the floor means will roll to the outside edge of said floor means, said floor means further including egg retaining means along the outer edge of said floor means to retain said eggs,

g. partition means including a plurality of partition walls vertically arranged and attached to said support means and said floor means to divide the space along each tier between the cover means, curtain wall means and floor means into a series of individual cages, and

h. door means pivotally attached to said support means to enclose said cages and retain poultry therewithin.

3,867,904

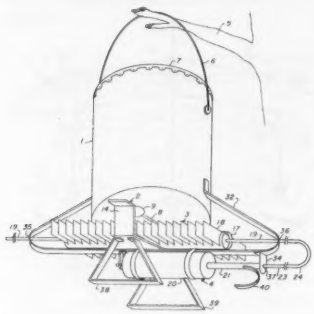
ANIMAL FEEDER

James William Akkerman, 1902 Mermaid Ln., Houston, Tex. 77058

Filed May 9, 1973, Ser. No. 358,496
Int. Cl. A01k *05/02*
U.S. Cl. 119—51 R **9 Claims**

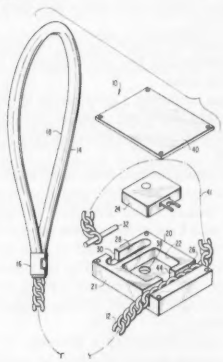
1. An animal feeder comprising:

a. container means for storing animal feed therein;
b. receiver means mounted beneath said container means for receiving animal feed discharged therefrom;
c. rake means adjacent said receiver means and movable relative thereto for dispensing animal feed from said receiving means, said rake means comprising a plurality



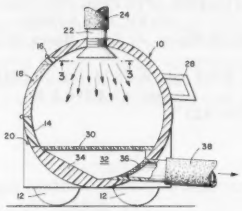
of longitudinally spaced blades mounted transversely to the direction of movement of said rake means; and
d. drive means connected to said rake means, responsive to changing ambient temperature, to move said rake means relative to said receiver means for said dispensing of animal feed therefrom.

3,867,905
CANINE SECURITY LEASH
Richard W. Vail, Jr., 925-0 Fairview Ave., Arcadia, Calif. 91006
Filed Aug. 7, 1973, Ser. No. 386,370
Int. Cl. A01k *27/00*
U.S. Cl. 119—109 **9 Claims**



1. A canine security leash comprising a tether having a predetermined length, means forming and maintaining a loop at one end of said tether thereby providing a handle for said leash, a lock for preventing unauthorized removal of the canine from the leash including a lock housing, means for securing said lock housing to the opposite end of said tether, said lock housing having a passageway for slidably receiving a portion of said tether intermediate the end thereof secured to said lock housing and its opposite end thereby forming a second loop of variable size at the opposite end of said leash, the opposite end portions of the tether forming said second loop being coupled directly to said lock with the size of said second loop being determined by the distance along the tether between the intermediate tether portion in said passageway and said opposite tether end, said lock housing carrying a locking element releasably engageable with said tether in said passageway to lock said tether against movement in said passageway, thereby adapting said second loop for releasable locking engagement about the neck of a canine, said locking element when engaged with said tether in said passageway preventing unauthorized change in the size of said second loop.

3,867,906
DOG SHOWER
Phyllis Johnson, St. Albans, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y.
Filed Dec. 17, 1973, Ser. No. 425,248
Int. Cl. A01k *29/00*
U.S. Cl. 119—158 **9 Claims**

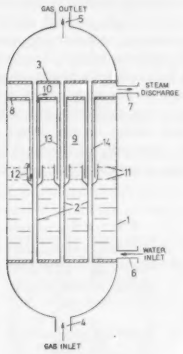


1. A device comprising an enclosure means for enclosing an object to be washed, a nozzle means disposed at the top of said enclosure for spraying said object with water, a foraminous drain floor means disposed proximate the bottom of said enclosure for supporting said object and for permitting liquid and any particles removed from said object during washing to drop to the bottom of said enclosure, said nozzle having a large central hole for purveying water independent of a detergent and a plurality of smaller holes disposed about said central hole for purveying liquid detergent independently of the purveying of said water.

3,867,907
STEAM GENERATOR
Hans-Dieter Marsch, Dortmund-Oespel, Germany, assignor to Friedrick Uhde GmbH, Dortmund, Germany
Filed June 3, 1974, Ser. No. 475,624
Claims priority, application Germany, June 16, 1973, 2330705
Int. Cl. F22b *1/06*
U.S. Cl. 122—34 **4 Claims**

1. A steam generator comprising an upright closed housing provided with a gas inlet at the lower end and a gas outlet at the upper end thereof, a lower tubesheet in the lower portion of said housing, an upper tubesheet in the upper portion of said housing, a plurality of spaced heating gas tubes fixed at their ends in said tubesheets respectively enabling gas passage from said inlet to said outlet, an intermediate tubesheet spaced a relatively short distance below said upper tubesheet to form a steam space, said intermediate tubesheet being apertured to enable said gas tubes to pass freely therethrough, a steam outlet in said housing for venting said steam space, a water inlet in said housing adjacent to and above said lower tubesheet, steam guide tubes for said heating tubes secured at their upper ends in said intermediate tubesheet, spaced from said heating tubes and extending for a substantial portion of the length thereof, and protective cups open at the top freely to receive the lower end portions of said steam guide tubes, and fitting said gas tubes in liquid tight fashion, whereby,

water in the lower end portion of said housing forms steam which passes into the protective cups and upwardly through



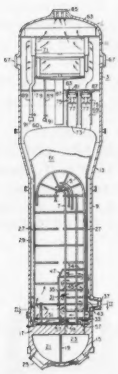
said steam guide tubes, thence to the steam space, and finally discharges through said steam outlet.

3,867,908

CROSS FLOW BAFFLE FOR A STEAM GENERATOR

Wilbur M. Byerley, and Robert R. Bennett, both of Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 24, 1973, Ser. No. 354,031
Int. Cl. F22b *1/04*
U.S. Cl. 122—32 **6 Claims**



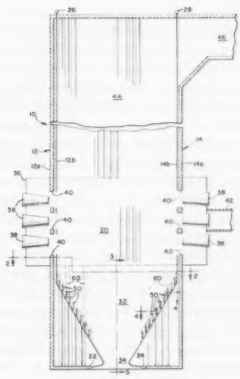
1. A vapor generator comprising a shell portion,
a tube bundle having a plurality of tubes disposed within said shell portion,
a wrapper disposed within said shell so as to generally enwrap said tube bundle,
a tube sheet disposed on one end of the tube bundle
a head portion cooperatively associated with said shell and tube sheet,
a primary fluid inlet nozzle for supplying primary fluid to the inside of said tube,
a secondary fluid inlet nozzle for supplying secondary fluid to the inside of said shell and the outside of said tubes,
a baffle disposed parallel to said tube sheet and cooperatively associated with said wrapper so that at least a portion of the secondary fluid sweeps across said tube sheet and flows between an area between said baffle and said tube sheet,
said baffle having a plurality of tube holes through which the tubes pass, said holes embracing said tubes and said baffle having a plurality of circulation holes through which at least a portion of the secondary fluid flows,
said circulation holes being disposed in a plurality of zones, a first zone adjacent the central portion of said baffle, said first zone generally having a maximum number and size of circulation holes to generally form a maximum amount of open area for the flow of secondary fluid therethrough, and a second zone disposed adjacent and generally encircling said first zone, said second zone having circulation holes arranged to form substantially less than the maximum amount of open area for the flow of secondary fluid through said second zone.

3,867,909

SLAG PREVENTION AIR SLOTS IN FURNACE SIDEWALLS

John A. Brown, Gulfport, Miss., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Nov. 19, 1973, Ser. No. 417,319
Int. Cl. F22b *15/00*
U.S. Cl. 122—235 B **7 Claims**



1. A furnace structure comprising at least four walls interconnected to form an enclosure, at least a portion of said walls defining an internal heat absorption surface, burner means associated with at least one of said walls for burning a fossil fuel within said enclosure and adjacent said heat absorption surface, said wall associated with said burner means having a vertical portion and a sloped portion, a plurality of openings extending through at least one of the walls connected to said wall associated with said burner means, and means for supplying air to said openings, said openings being located relative to said wall associated with said burner means so that said air passes substantially perpendicular to said vertical portion of said wall and across said sloped portion and across the junction between said vertical portion and said sloped portion to continuously maintain an oxidizing atmosphere at the heat absorption surface defined by said portions.

3,867,910

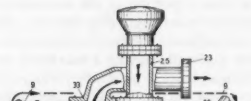
ENGINE CONSTRUCTION AND OPERATING METHOD UTILIZING EXHAUST GAS AS A SOURCE OF ENERGY

Walter Galonska, 164 E. 87th St., New York, N.Y. 10028

Filed Mar. 27, 1973, Ser. No. 345,321

Int. Cl. F02b *53/10*

U.S. Cl. 123—8.13 3 Claims



1. In a rotary type of Wankel engine, a housing having an exhaust chamber provided with a primary exhaust port as well as an exhaust port for part of the exhaust gas situated 10°–40° in advance of the primary exhaust port, said housing having also an intake chamber provided with a primary supply port and approximately 20° subsequent to the primary supply port a further supply port capable of delivering gas all the way up to an expansion chamber, the auxiliary exhaust and auxiliary supply ports being interconnected by a duct and a rotary piston being situated in the housing for controlling the exhaust and supply flows to achieve an optimal amount of exhaust gas and fresh air for fuel atomization with simultaneous charging of the intake chamber, a fuel supply mixing chamber being provided and an exhaust gas collection means being provided for special supply of fresh air and exhaust gas, to charge and treat a fuel mixture and control the flow of exhaust gas to the outer atmosphere, the said exhaust gas collection means being divided into a pair of chambers separated by a thick partition wall, and having an air supply duct and an exhaust supply duct with the exhaust gas duct functioning to supply air as well as compress and charge the air, and in addition to treat a fuel mixture in said fuel supply mixing chamber which receives gas from the exhaust gas collecting means, the latter having a valve means for automatically regulating the flow of exhaust gas to the outer atmosphere, the latter automatic valve means being situated at an outlet to the outer atmosphere and operating to automatically control the pressure of the exhaust gas to maintain an optimum amount of exhaust gas for charging and fuel treating purposes.

3,867,911

ROTARY PISTON INTERNAL COMBUSTION ENGINE

Johann Keylwert, Cologne, Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Germany

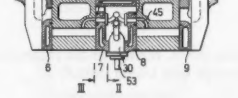
Filed Feb. 7, 1974, Ser. No. 440,353

Claims priority, application Germany, Feb. 8, 1973, 2306060

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.15 20 Claims

1. A rotary piston internal combustion engine, which includes: housing means having end walls and mantle means located between said end walls and connected thereto, rotary piston means eccentrically rotatable within said housing means and having outer peripheral surface means with an even number of circumferentially evenly distributed axis-near zones interconnected by radially outwardly arched zones thereby dividing said outer peripheral surface means into an even number of peripheral sections, the inner surface of said housing means being provided with a number of lobes and arcs corresponding in number to one more than the number of axis-near zones of said piston means and corresponding in shape to the arcs and axis near zones of said piston means and adapted to form working chambers therewith the size of which varies during a revolution of said piston means, inlet and outlet control openings respectively associated with every other one of said sections, inlet and outlet means respectively provided in end faces of said piston means, inlet and outlet connecting passage means arranged in said piston means and respectively connecting said inlet and outlet control openings with said inlet and outlet means, inner axial sealing means arranged radially outwardly of the path of movement of said outlet means during rotation of said piston means, combustion



chamber means fixedly connected to said housing means, first and second conduit means connected to said combustion chamber means, transfer passage means located in said piston means and adapted to communicate with said working chambers, said first and second conduit means and said transfer passage means being adapted to establish communication between said combustion chamber and respective working chambers, said transfer passage means having a smaller cross section than said inlet and outlet connecting passage means and each respectively comprising a mouth opening located in the region of the piston circumference and on an end face of said piston means, the path of movement of said mouth openings being located outside said inner axial sealing means and moving successively over the mouth openings of said two conduit systems in side walls of said housing means.

3,867,912

ROTARY ENGINE

Edward L. Parr, and George T. Straza, both of El Cajon, Calif., assignors to Straza Enterprises Ltd., El Cajon, Calif.

Filed Aug. 2, 1973, Ser. No. 384,962

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.41 4 Claims

1. A rotary engine comprising,

a compressor unit and a power unit;

said compressor unit having a housing with a toroidal compression chamber, and a piston rotatable in the compression chamber;

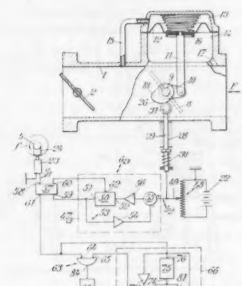
said power unit having a housing with a toroidal power chamber, and a piston rotatable in the power chamber;
a common drive shaft connecting said pistons and being axially rotatably mounted in said housings;
said units each having a substantially cylindrical rotary sleeve valve with an opening to receive the respective piston, each sleeve valve intersecting and extending across the respective toroidal chamber and being synchronized with the pistons therein to seal with the piston passing through the opening;
said sleeve valves having a common axial shaft parallel to said drive shaft;
said compressor unit having an air intake opening into the compression chamber immediately after the sleeve valve in the direction of rotation, and an air outlet opening out of the compression chamber in the portion thereof enclosed by the sleeve valve;
said power unit having an inlet and an exhaust outlet;
a transfer passage connecting said air outlet to said power unit inlet;
and said power unit having fuel injection and ignition means adjacent said inlet.

3,867,913

FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES

Michel Eugene Pierlot, Le Peco, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France

Continuation of Ser. No. 10,420, Feb. 11, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,767
Claims priority, application France, Feb. 14, 1969, 69.03791; Apr. 28, 1969, 69.13514
Int. Cl. F02b *3/00*; **F02m** *39/00*
U.S. Cl. 123—32 EA **15 Claims**



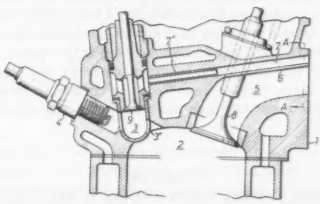
1. A fuel feed device for internal combustion engines comprising, in an intake pipe of the engine, a main throttle member actuated by the driver, a source of fuel under pressure, a delivery circuit in fluid communication with said fuel source and which opens into the portion of the intake pipe situated downstream of the main throttle member, at least one valve positioned to control said delivery circuit, an electromagnet in operative relationship for actuating said valve, and a metering system which comprises a rotary member rotated continuously and independently from any necessary synchronization with said engine and an auxiliary throttle member and arranged to be opened or closed automatically and progressively to a degree which is a function of the flow rate of air in said pipe as it increases or decreases respectively, said metering system being adapted to send into the electromagnet at least one energizing signal during a fraction of each turn of the rotary member, said fraction varying in proportion only as the degree of opening of auxiliary throttle member, which is governed by said flow rate of air, the metering system comprising means operatively associated with said rotary member for generating a first electrical signal on each turn of the rotary member, means sensitive to the degree of opening of the auxiliary throttle member for generating a second electrical signal representative of the degree of opening of said auxiliary throttle member, and signal forming means receiving said second signal and responsive to each said first signal for generating one of said energizing signals during a fraction of the corresponding turn of the rotary member which is a function of said second signal only.

3,867,914

DEVICE FOR ACCELERATING FUEL VAPORIZATION IN AN INTERNAL COMBUSTION ENGINE

Shoichiro Irimajiri, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 29, 1973, Ser. No. 374,866
Claims priority, application Japan, June 30, 1972, 47-77417
Int. Cl. F02b *19/10*
U.S. Cl. 123—75 B **3 Claims**



1. In an internal combustion engine of the type having a cylinder head with a combustion chamber formed therein, the combination comprising:
means forming an intake conduit in said cylinder nead for passing a fuel mixture to said chamber, means forming an exhaust conduit in said cylinder head for passing exhaust gases from said chamber, a first portion of said intake conduit being coextensive with a portion of said exhaust conduit, said intake conduit having a peripheral wall a substantial portion of which extends into said exhaust conduit in heat transferring relationship, a second portion of said intake conduit not being coextensive with said exhaust conduit and extending through said cylinder head, a heat insulating sleeve disposed within said second portion of said intake conduit.

3,867,915

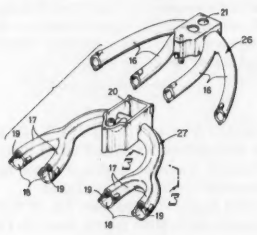
HEATED INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yoshitoshi Sakurai, Kawasaki, and Satoru Ohata, Oi-machi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 22, 1973, Ser. No. 372,745
Claims priority, application Japan, June 28, 1972, 47-64668
Int. Cl. F02b *19/10, 19/16*
U.S. Cl. 123—75 B **4 Claims**

1. In an intake and exhaust manifold assembly for a multi-cylinder internal combustion engine, each cylinder having a main combustion chamber and an auxiliary combustion chamber connected by a torch nozzle, a spark plug associated with each auxiliary combustion chamber, a rich mixture passage communicating with the auxiliary combustion chamber, a lean mixture passage communicating with the main combustion chamber, and an exhaust passage communicating with the main combustion chamber, the improvement comprising, in combination: a main intake manifold having branch pipes

communicating with a vaporizing chamber, each pipe being connected to deliver lean mixture to one of said lean mixture passages, respectively, a second manifold having branch pipes communicating with a collection chamber and each connected to receive exhaust gases from one of said exhaust passages, respectively, each exhaust pipe having an auxiliary intake pipe formed integrally therewith and extending throughout the length thereof, a boundary wall separating



each auxiliary inlet pipe from its respective exhaust pipe, said auxiliary intake pipes extending from said collection chamber to each of said auxiliary inlet pasages, respectively, means for supplying rich mixture to said auxiliary intake pipes, means for securing the chambers together whereby the vaporization chamber may receive heat from the collection chamber, and means for supplying lean mixture to the vaporization chamber.

3,867,916

INTERNAL COMBUSTION ENGINE IGNITION CONTROL SYSTEM

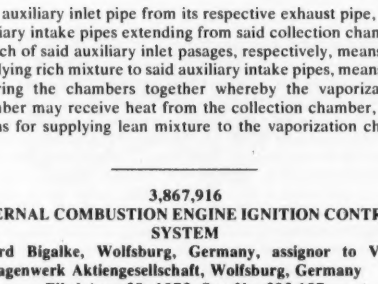
Erhard Bigalke, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Aug. 28, 1973, Ser. No. 392,187

Claims priority, application Germany, Dec. 15, 1972, 2261420

Int. Cl. F02p *5/08*

U.S. Cl. 123—117 R **15 Claims**



1. An ignition spark advance control system for a spark-ignited, internal combustion engine comprising, in combination;

a. integrator means for (1) producing a first increasing signal of predetermined slope during a predetermined crankshaft angle of rotation before ignition, said first increasing signal having a final value at the end of said angle of rotation and said angle of rotation having a duration that is inversely related to the engine RPM whereby a large first signal final value represents low engine RPM and a small first signal final value represents high engine RPM and (2) producing a second increasing signal of predetermined slope beginning at the end of said predetermined crankshaft angle of rotation, said second increasing signal having a slope chosen so that at a predetermined high engine RPM, said second signal equals said first signal value at a selected early ignition advance angle before TDC;

b. time-controlled potential storage means connected to said integrator means for storing said first signal final value at the end of said predetermined crankshaft angle of rotation;

c. feedback means from said storage means to said integrator means for adjusting the slope of said second signal so that at an engine RPM below said predetermined high RPM said second signal equals said first signal final value at an ignition advance angle between said selected early angle and TDC, said ignition advance angle approaching TDC as said engine RPM decreases below said predetermined high RPM;

d. comparator means connected (1) to said time-controlled potential storage means for receiving said first signal final value and (2) to said integrator means for receiving said second signal, said comparator means producing an output pulse when said second signal equals said first signal final value; and

e. control means connected to said comparator means for triggering said engine ignition in response to said output pulse.

3,867,917

COMBUSTION MACHINES

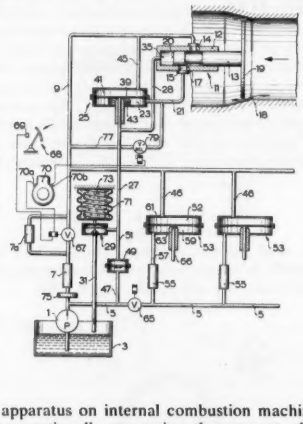
Johannes Zeyns, Krauler Elbdeich, Pappelhof, 2 Hamburg-Kirchwerder 4, and Heinz Enneking, Hegholt 32, 2 Hamburg, both of Germany

Filed July 30, 1972, Ser. No. 268,656

Claims priority, application Germany, July 9, 1971, 2134203; Dec. 15, 1971, 2162241

Int. Cl. F02d *3/00*

U.S. Cl. 123—119 R **22 Claims**



1. An apparatus on internal combustion machines with a device for continually measuring the amount of incoming combustion air and for measuring and uniformly distributing the amounts of fuel corresponding to the amount of air to a plurality of injection valves associated with a plurality of operating cylinders, wherein a measuring device exposed to the combustion air-stream is arranged in the air inlet channel which alters a throughput opening in a fuel control line in proportion to the amount of air flowing in the inlet channel, whereby, in the fuel control line connected upstream to the fuel pump via an amplifying resistance, conveying a fuel control flow and connected downstream via a difference pressure regulator back to the tank, there is produced a fuel control pressure downstream of said amplifying resistance which fuel control pressure actuates a plurality of pressure regulators connected in parallel and associated with the respective injection valves, through which the fuel passes via measuring resistances for injection and in which the outflow cross-section is

adjusted in dependence upon the fuel control pressure so that the pressure drop at the measuring resistance of each pressure regulator is equal to the pressure drop at the amplifying resistance.

3,867,918

FUEL SUPPLY SYSTEMS FOR INTERNAL COMBUSTION ENGINES

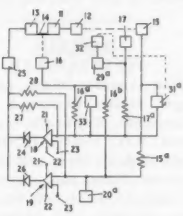
Malcolm Williams, Solihull; Geoffrey Albert Kenyon Brunt, Glastonbury; Christopher Robin Jones, Alcester, and Anthony John Adey, Slough, all of England, assignors to C.A.V. Limited, Birmingham, England

Filed Dec. 4, 1972, Ser. No. 311,638

Claims priority, application Great Britain, Mar. 12, 1971, 56188/71; Apr. 4, 1972, 15353/72; Apr. 4, 1972, 15364/72

Int. Cl. F02m *39/00;* **F02b** *3/00*

U.S. Cl. 123—139 E **21 Claims**



1. A fuel supply system for an engine, comprising in combination a pump for supplying fuel to the engine, pump control means for controlling the output of the pump, a first summing amplifier to which are fed electrical signals representing the demanded and actual values of pump output, the first summing amplifier comparing the signals and producing an output for controlling the pump control means, a second summing amplifier to which are fed electrical signals representing engine speed, pump output, and a reference, and a discriminator coupling the first and second summing amplifiers to the pump control means, the output from the discriminator at any given instant being the output from the summing amplifier which demands the least fuel, so that the second summing amplifier limits the maximum speed of the engine but varies the maximum speed of the engine in accordance with the pump output, said summing amplifiers each having a feedback path incorporating a resistor, and each of said feedback paths being taken from the input to the pump control means.

3,867,919

ANTI-DIESELING CONTROL

Emile P. Grenier, and George H. Muller, both of Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 5, 1973, Ser. No. 329,923

Int. Cl. F02b *77/00;* **F02d** *31/00*

U.S. Cl. 123—198 D **4 Claims**

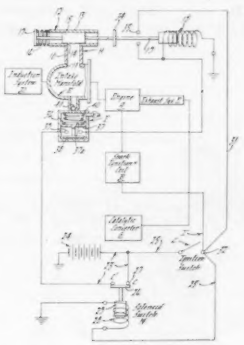
1. For use with an engine having a primary combustion zone and a selectively controllable spark ignition system which can be de-energized for shutting down said engine, the combination comprising:

a. an air-fuel induction means for supplying a combustible mixture to said engine,

b. a duct for supplying fresh air to said mixture,

c. a valve for controlling the admission of fresh air to said duct and having a housing extending across said duct and a valve member slidable in said housing for closing off said duct,

d. means for operating said valve between open and closed positions of said duct, said means normally biasing said member to a closed position and having a solenoid actuator responsive to engine shut down for overcoming said bias to move said member to an open position, said operating means providing an electrical circuit for said actuator which is responsive to selective de-energization of said spark ignition system to open said valve and delay completion of said de-energization to permit ignition of said mixture for a predetermined period, said circuit being responsive to normal energization of said spark ignition system to open said circuit, and



e. a catalytic converter having material for sustaining combustion at a predetermined temperature level, said operating means being effective to continue combustion of said mixture in said primary zone after engine shut-down in a manner to prevent uncombusted mixtures from reaching said catalytic converter that can flamingly combust in said converter at said predetermined temperature level.

3,867,920

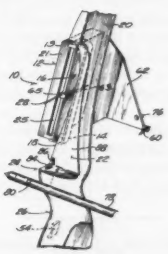
BOW DRAWING INDICATOR

Kenneth M. Westphal, 836 N. 28 St., Milwaukee, Wis.

Division of Ser. No. 201,046, Nov. 22, 1971, Pat. No. 3,766,656. This application Aug. 3, 1973, Ser. No. 385,492

Int. Cl. F41b *5/00*

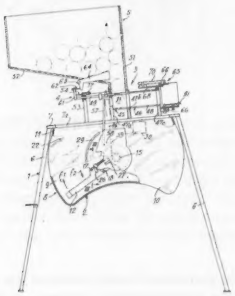
U.S. Cl. 124—24 R **2 Claims**



1. In combination with an archery bow having an arrow rest, an arrow with an exposed electrical conductor, spaced electrical contact means on said arrow rest for forming an electrical circuit with said conductor on said arrow, said conductor being adjustably movable longitudinally of the arrow, a signal light, a battery, and an electrical circuit means connecting said signal light to said battery and to said spaced electrical contact means on said arrow rest, whereby said contact means engages said electrical conductor on said arrow to complete the circuit

to said signal light and illuminate said signal light when said arrow is at a predetermined position on said arrow rest.

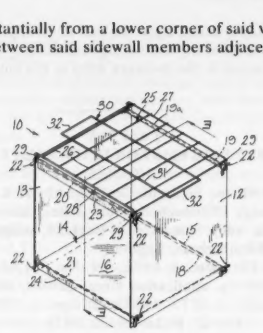
3,867,921
SPRING TYPE BALL THROWING DEVICE
Eugene Jim Politzer, 65 rue Jouffroy, Paris 17eme, France
Filed Oct. 26, 1973, Ser. No. 409,889
Claims priority, application France, Nov. 13, 1972, 72.40190
Int. Cl. F41b *7/00*
U.S. Cl. 124—26 **11 Claims**



1. In a ball throwing device including:
a frame, a driving means for providing a throwing pulse to a ball, said frame supporting said driving means; a ball magazine mounted on said frame; a barrel loading chamber mounted on said frame and spaced below said ball magazine; and ball feeding means, associated with said driving means, for intermittently feeding a ball from said ball magazine to said barrel loading chamber in response to the operation of said driving means;
the improvement comprising: a ball guide, including a barrel connected at one end thereof to said loading chamber; a ball deflecting means positioned at the other end of said barrel, and pivotable in response to the operation of said ball feeding means for deflecting a ball through a plurality of trajectories by being alternately pivoted about an axis substantially perpendicular to the longitudinal axis of said barrel; and
a control means operatively associated with said ball feeding means for causing said driving means to gradually store up a throwing impulse force while said ball feeding means is feeding a ball into said barrel loading chamber.

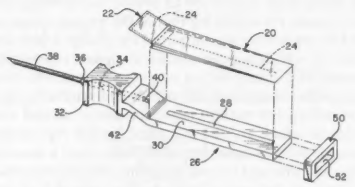
3,867,922
STOVE
Emil F. Dahlquist, 31 Morgan Pk., Clinton, Conn. 06413
Filed Jan. 24, 1974, Ser. No. 436,189
Int. Cl. A21b *1/52*
U.S. Cl. 126—274 **6 Claims**

1. A stove adapted to receive radiant heat energy from a generally horizontal direction, comprising spaced apart sidewall members, a radiant heat energy reflecting member extending between said sidewall members, said reflecting member having reflecting surfaces on both sides thereof and extending substantially from a lower corner of said wall member extending between said sidewall members adjacent the lower



edges thereof and below one of said reflecting surfaces,members above the other of said reflecting surfaces.

3,867,923
FLUID SAMPLER
Roland James West, Andover, Mass., assignor to Ronald J. Borbely, Bangor, Maine; Richard S. Burtt, Tewksbury, Mass.; Paul Newcomb, Weymouth, Mass.; James Vaughn, Seabrook Beach, N.H.; George Grant, Medford; Robert Gomes, Boxford, both of, Mass. and Inc. Andover Medical Industries, Andover, Mass., part interest to each
Filed June 14, 1973, Ser. No. 369,792
Int. Cl. A61b *5/10;* **A61m** *1/00*
U.S. Cl. 128—2 F **20 Claims**

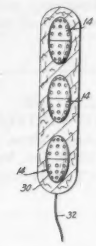


1. A device for collecting samples from pressurized fluids comprising, in combination;
a fluid impermeable container comprising two opposing walls sealed together, except at one opening therebetween, about a common periphery so as to be substantially in face-to-face contact with one another throughout the interior portion of said container, said container being expandable when said sample is received therein through said opening;
means for supporting said container along its length and including a fluid conduit, one end of said conduit defining an aperture in said supporting means, said opening of said container being releasably sealed to communicate with said aperture, and;
valve means cooperating with said container and said supporting means for releasably clamping said two opposing walls of said container together at a location substantially near said opening.

3,867,924
INTERNAL BLOOD COLLECTION
Louis Bucalo, Holbrook, N.Y., assignor to Microbyx Corporation, New York, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,671
Int. Cl. A61b *5/14;* **A61f** *13/20*
U.S. Cl. 128—2 F **13 Claims**

1. In a method for collecting and analyzing the blood of a living being, the steps of introducing into a body of a living being whose blood is to be analyzed, at a preexisting, accessible cavity of the body which at least temporarily contains

blood of the living being, a device having an interior capable of receiving and holding blood which is present in the cavity when the entire device is introduced into and remains wholly within the cavity, said device having a blood preservative preliminarily situated in its interior prior to introduction of the device into the body cavity for preserving blood which is received and held in the interior of the device, said device being introduced into said cavity at a time which will assure presence of the device in the cavity when blood is present therein, removing the latter device from the body cavity after the device has remained therein for a period of time sufficient



to receive and hold blood of the living being, so that blood is removed with the device, and testing at least part of the blood thus removed from the body cavity with the device.

5. For use in the collection of blood in a body cavity, a tampon means and at least one device carried by said tampon means for receiving and holding blood which is accessible in the device upon removal of the tampon means from the body cavity, said device including an outer holder formed with an entrance means through which blood can flow freely into the interior of the holder and retaining means situated within and held by the holder for retaining blood in the latter.

3,867,925

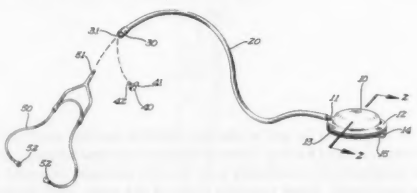
EXPENDABLE STETHOSCOPE

Robert A. Ersek, Minneapolis, Minn., assignor to Med General, Inc., Minneapolis, Minn.

Filed Feb. 17, 1971, Ser. No. 115,995

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 S **4 Claims**



1. Stethoscope bell means for removable attachment to the skin surface of the body of a patient and comprising:

a. bell means including a substantially rigid, self-supporting generally cup-shaped housing shell with a closed bottom wall, side walls extending from said bottom wall, and flanged surface mounting means extending outwardly about the entire edge surface of said side walls, said bottom wall, side walls, and flange means forming a generally closed chamber with an open top;

b. coupling conduit means communicating with said chamber through one of said walls and having the outer periphery thereof in generally fluid-tight attachment to said chamber, said coupling conduit arranged for releasably securing an elongated sound transmitting conduit for transmission of sound waves therethrough; and

c. a film of pressure-sensitive adhesive secured to the exposed surface of said flanged surface mounting means enabling surface attachment of said stethoscope bell means to the skin of the body of a patient and formation of a closed chamber.

3,867,926

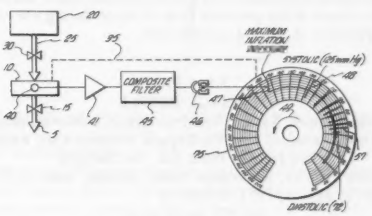
BLOOD PRESSURE MEASURING DEVICE UTILIZING SUB-AUDIBLE FREQUENCY FOR DETECTION

Sidney Lee Friedlander, Tarzana, Calif., assignor to Sphygmetrics, Inc., Woodland Hills, Calif.

Filed Oct. 24, 1972, Ser. No. 300,077

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 **6 Claims**



5. A system for detecting a subject's blood pressure wherein means are employed for momentarily occluding and slowly releasing the blood's flow in an artery which is accessible for indirect sensing, said artery having a blood pulse present which creates a high energy composite signal in a frequency range of d.c. to about 5 Hz, said system having a transducer for converting the arterial wall movement into an electrical signal, and an indicating means connected to the occluding means and responsive to an electrical input signal for registering a subject's blood pressure, the improvement comprising:

said transducer exhibiting a first filter characteristic selected to emit an electrical signal which possess a fundamental subaudible frequency that may be detected and used as an indication of the subject's blood pressure;

said indicating means exhibiting a second filter characteristic to pass an electrical signal indicative of a subject's blood pressure to be recorded; and

means connected between the transducer and the indicating means, to form a combined filter characteristic therewith for blocking passage of the blood pulse signal and isolating the fundamental frequency from other frequencies in the transducer output signal, said combined filter characteristic characterized by:

a center frequency f_c selected at about 17 Hz,

a bandwidth of approximately 10 to 30 Hz measured at the 3 to 6 db points, and

a sharp low frequency cut-off to essentially infinite db at about 5 to 7 Hz.

3,867,927

TONGUE BLADE SUCKER

Patrick F. Hergott, 211 9th St. N.E., Waseca, Minn. 56093

Filed June 13, 1974, Ser. No. 478,836

Int. Cl. A61b *1/24*

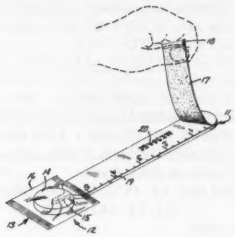
U.S. Cl. 128—15 **8 Claims**

1. Apparatus for motivating the cooperation of youthful patients in oral examinations comprising, in combination:

a blade having a first end for manipulating the patient's tongue and a second end for simultaneously retaining the patient's attention;

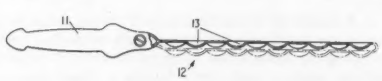
a waterproof protecting strip removably adhered to the face of the first end of the blade to engage the patient's tongue

and prevent it from substantial contact with the blade;



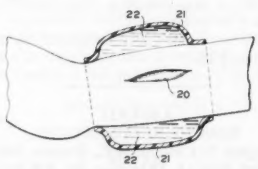
and a reward element carried by the second end of the blade to remain in the patient's field of vision during use of the appliance in an oral examination.

3,867,928
MASSAGE DEVICE
Earl Silas Tupper, Nassau, New Providence, Bahamas, assignor to Tup! (Panama) S.A. Via Espana, Panama City, Panama
Filed June 6, 1972, Ser. No. 260,204
Claims priority, application Great Britain, June 9, 1971, 19748/71; June 9, 1971, 19749/71
Int. Cl. A61h *29/00*
U.S. Cl. 128—24.1 **4 Claims**



1. A massage device consisting of a handle; a unitary resilient blade having a generally flat massage surface, said blade being connected directly to said handle; a plurality of rounded depressions in said generally flat massage surface thereon to provide massage elements and form an operative massage surface.

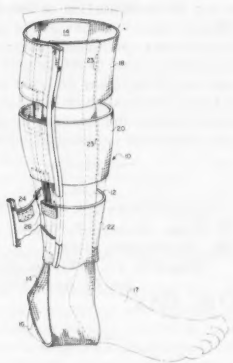
3,867,929
ULTRASONIC TREATMENT DEVICE AND METHODS FOR USING THE SAME
Bobby L. Joyner, Spring Mills; Betty L. Yearick, Howard; Harold S. Kaiser, and James W. Anderson, both of State College, all of Pa., assignors to Linden Laboratories, Inc., State College, Pa.
Filed Mar. 20, 1970, Ser. No. 21,235
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **8 Claims**



1. A therapeutic treatment device comprising a bath adapted to contain a therapeutic liquid; at least one acoustic transducer means attached to said bath for conveying uniform acoustic energy through said liquid at a uniform ultrasonic frequency; means operatively connected to said transducer means to selectively adjust the power of said energy to a uniform level up to 1.0 Watt/square centimeter of surface being treated within said liquid; and an acoustically transparent container adapted to contain a medication and surround an open wound, and adapted to be immersed in said liquid.

6. A method for the simultaneous treatment and cleaning of an open wound of a patient comprising placing said wound in a solution containing a medication within an acoustically transparent container surrounding said wound; placing said container in an ultrasonically oscillating bath; conveying uniform acoustic energy at a uniform ultrasonic frequency from said ultrasonically oscillating bath through said container and to said solution; and selectively adjusting the power of said energy up to the maximum comfort level of said patient while maintaining said uniform frequency, said level being no higher than 1.0 Watt/square centimeter of surface being treated in said bath.

3,867,930
TRACTION BAND WITH INTEGRAL FASTENERS
Dora Brown, 509 E. Parkway, Fulton, Miss. 38843
Filed May 8, 1973, Ser. No. 358,413
Int. Cl. A61f *5/04*
U.S. Cl. 128—83 **2 Claims**

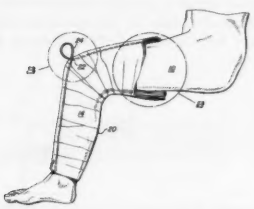


2. Apparatus for use in placing a limb in traction comprising a traction band having a central loop portion and having a pair of longitudinally extending soft, flexible portions intended to be positioned along opposite sides of the limb, said traction band being comprised of a multiple ply fabric material, a plurality of transversely extending securing bands made of elastic material and of a length to extend around the limb, said securing bands being sewn to said longitudinally extending portions of said traction band at spaced points along said securing bands to provide intermediate portions of said securing bands disposed between and connecting said longitudinally extending portions of said traction band to each other, the opposite ends of said securing bands extending beyond the respective longitudinally extending portions of said traction band, said securing bands being of progressively decreasing length in a direction towards the loop portion of said traction band, and cooperating hook and loop type fasteners located adjacent the ends of each securing band on opposite sides thereof and detachably engageable with each other upon the respective securing band being fastened around the limb.

3,867,931
METHOD FOR REMOVING AN ORTHOPEDIC CAST UTILIZING AN EMBEDDED WIRE

Joseph A. Babka, 414 E. Roeser, Apt. 175, Phoenix, Ariz. 85040

Filed Dec. 19, 1973, Ser. No. 426,305
Int. Cl. A61f 5/04
U.S. Cl. 128—91 A 4 Claims

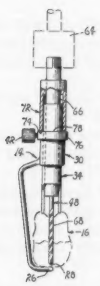


1. The method for removing a cast, comprising the steps of:
placing a wire along a limb;
making a loop in the wire intermediate the ends of the wire;
embedding the wire under the cast with the loop extending outwardly of the cast and with the ends of the wire secured within the cast;
cutting the wire into two portions by cutting the loop;
securing a first portion of the wire onto a spool; and
imparting rotary motion to the spool to draw the wire through the cast to fracture the cast.

3,867,932
ASSEMBLY FOR INSERTING RIGID SHAFTS INTO FRACTURED BONES

Donald R. Huene, 6540 N. Roosevelt, Fresno, Calif. 93704

Filed Jan. 18, 1974, Ser. No. 434,423
Int. Cl. A61f 5/04
U.S. Cl. 128—92 E 12 Claims

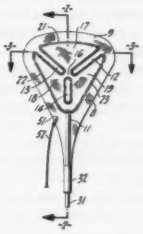


1. In an assembly for inserting rigid shafts into opposed segments of a fractured bone, the improvement comprising:
a clamp including an elongated body having a fixed jaw projected laterally therefrom adapted to engage a fractured bone at a first surface thereof, a bearing sleeve fixed to said body in spaced relation to said fixed jaw, an axially movable jaw including a body of a tubular configuration supported by said bearing sleeve and having a distal end of a bifurcated configuration for engaging the fractured bone at a second surface thereof, oppositely related to said first surface, and means for securing said movable jaw in a fixed relationship with said fixed jaw.

3,867,933
INTRAUTERINE DEVICE AND PROCESS OF MAKING THE SAME

Sotiris Kitrilakis, Berkeley, Calif., assignor to Tecna Corporation, Emeryville, Calif.

Filed Mar. 6, 1973, Ser. No. 338,560
Int. Cl. A61f 5/46
U.S. Cl. 128—129 8 Claims

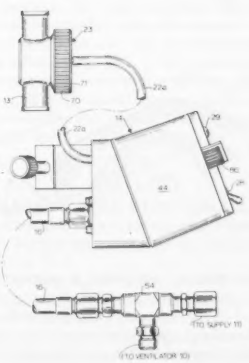


1. An intrauterine device comprising a pair of sheets of soft, rubber-like, substantially liquid-impervious, non-toxic material, said sheets having the approximate shape in plan of a triangle and being arranged in registry with each other, said sheets having about the same dimensions as the undistorted human uterine cavity, a non-stretchable mat of pliable fibers united with said sheets to prevent stretching thereof, means securing said sheets together in a planar band all around the edges of said sheets except for a gap at one apex thereof, and means securing said sheets together along areas bisecting the apices of said triangle except at said gap and except at a region at the center of said triangle leaving three unsecured zones communicating with each other and with said gap and extending approximately parallel to the sides of said triangle.

3,867,934
PRESSURE MONITOR FOR A LUNG VENTILATOR

Louis A. Ollivier, Menlo Park, Calif., assignor to Veriflo Corporation, Richmond, Calif.

Filed May 4, 1973, Ser. No. 357,323
Int. Cl. A61m 16/00
U.S. Cl. 128—145.8 16 Claims



1. A fully pneumatic pressure monitor for a lung ventilator having a supply of breathing gas under pressure and an airway conduit for connection to a patient, including in combination:

a pressure regulator adapted to be connected to said supply, pneumatically-operated warning means,

pneumatic airway pressure sensing means adapted to be connected to a said airway conduit for sensing the pressure therein,

a low-limit detector pneumatically connected to said airway pressure sensing means and having a valve that it opens when said airway pressure is above a predetermined low limit, as it should be during the inspiratory phase of the ventilator's breathing cycle,

gas flow metering means connected to said regulator for supplying gas at a predetermined flow rate,

pneumatically-operated timing means connected to said gas flow metering means and having a control valve connected to said pressure regulator and that opens when the gas from said metering means builds up to a predetermined pressure level within said timing means, said timing means having means for sending a flow signal from said pressure regulator to said warning means when said control valve is opened,

said timing means being connected to said valve of said low-limit detector, whereby if said valve of said low-limit detector opens before said control valve is opened, the pressure buildup from said metering means is bled off through said valve of said low-limit detector and said control valve does not open,

a high-limit detector pneumatically connected to said airway pressure sensing means and having a valve that opens when the airway pressure exceeds a predetermined high limit,

high-limit pneumatic switch means pneumatically connected to said regulator and having an open position wherein actuating gas from said regulator is sent to said warning means and having a closed position wherein no such gas under pressure is sent, and

pneumatic means connected to said regulator, to said switch means and to said valve of said high-limit detector, for normally holding said switch means closed except when the valve of said high-limit detector is open to bleed said pneumatic means.

3,867,935

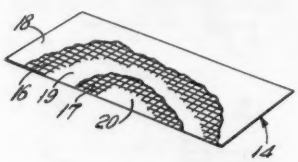
PLIED ABSORBENT STRUCTURES

Norman R. Eisdorfer, East Brunswick; John M. Lesniak, Englishtown, and Bernard M. Lichstein, Elizabeth, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed May 14, 1973, Ser. No. 359,802

Int. Cl. A61f *13/00*

U.S. Cl. 128—156 **8 Claims**



1. A surgical dressing comprising a plurality of plies of a textile-like nonwoven fabric of essentially unbonded, mechanically entangled fibers randomly entangled with each other in a pattern of localized entangled regions interconnected by fibers extending between adjacent entangled regions, said fabric having a Tensile Energy Absorption value of at least 1.0 foot - pounds per foot square, in both the machine and cross directions and said dressing having an absorption capacity per gram of total fabric at least equal to the absorption capacity per gram of a single ply of said fabric.

3,867,936

ANAESTHETIC GAS SAFETY EQUIPMENT

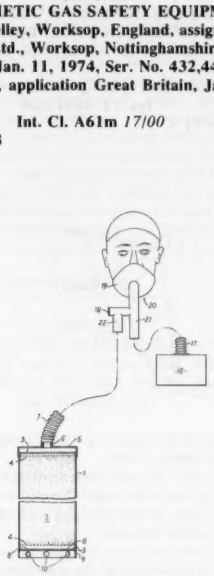
Donald Walter Kelley, Worksop, England, assignor to Shirley Aldred & Co. Ltd., Worksop, Nottinghamshire, England

Filed Jan. 11, 1974, Ser. No. 432,445

Claims priority, application Great Britain, Jan. 16, 1973, 2523/73

Int. Cl. A61m *17/00*

U.S. Cl. 128—188 **3 Claims**



1. Anaesthetic gas safety equipment comprising

i. delivery means to administer anaesthetic gas to a patient, said delivery means having a gas inlet and a gas outlet,

ii. a first flexible conduit having one end connected to said gas inlet,

iii. anaesthetic gas supply means connected to the other end of said first flexible conduit,

iv. a second flexible conduit having one end connected to said gas outlet, and

v. a man-portable anaesthetic gas absorber unit comprising:

a. a cylindrically walled hollow drum having radial end walls,

b. a central inlet in one end wall releasably coupled to the other end of said second flexible conduit, the other end wall being provided with a plurality of angularly spaced apertures,

c. a first perforated retainer sheet spaced inwardly from said one end wall,

d. a second perforated retainer sheet adjacent said other end wall and between it and the first perforated retainer sheet, and

e. a predetermined fixed quantity of absorber material between said first and second perforated retainer sheet and retained thereby, said material comprising carbon activated to absorb anaesthetic gas exhaled by the patient.

3,867,937

FLEXIBLE PROTECTIVE SHEATH FOR CATHETER

Boris Schwartz, 400 Park Ave., Paterson, N.J. 07504

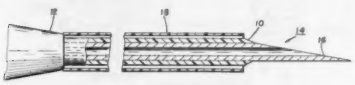
Continuation-in-part of Ser. No. 312,952, Dec. 7, 1972, abandoned. This application May 30, 1974, Ser. No. 474,303

Int. Cl. A61m *5/32*

U.S. Cl. 128—221 **3 Claims**

1. In combination with a flexible catheter for percutaneous use with a patient there is provided a flexible protective sheath slidably mounted on the midshaft portion, said combination including: (a) a flexible catheter of determined length and having an entering end and a hub end and with that midshaft portion of said catheter forwardly of the hub having a selected

outside relatively constant bore; (b) a stiff bore puncturing member slidably carried in the bore of the catheter and removable through the hub end after the desired penetration of the skin of a patient has been achieved, and (c) a very thin flexible plastic sheath of tube-like form whose wall thickness is less than two-thousandths of an inch in thickness and formed and sized so as to provide a sliding fit on the outer diameter of the midshaft of the catheter which it is to protect, the tube size being about one-third larger than the midshaft portion of the catheter for which it provides the protection, said sheath in an unmounted condition being open at both ends and when mounted having a length sufficient to extend from the skin-entering end of said catheter to a determined larger stop portion such as the hub of the catheter, said



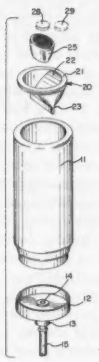
mounted sheath particularly adapted to engage the skin at the point of penetration and to be engaged by the skin at this opening to prevent further forward progress of the sheath whereat said sheath slides on the midshaft of the catheter and to the extent of shortening the sheath length progressively collapses into accordion-like folds as the catheter is caused to enter the entrance into and through the skin, the sheath providing a sliding guard continuously protecting against accidental contact of the outer surface diameter of the uninserted portion of the midshaft of the catheter by the user of the instrument during both the initial and progressive insertion through the skin, said sheath in its folded and unfolded portion remaining on the uninserted portion of the midshaft of the catheter during inserted use in a patient.

3,867,938

HYGIENIC SYRINGE

Remington Radcliffe, Lancaster, Pa., assignor to Schick Incorporated, Lancaster, Pa.

Filed Aug. 1, 1973, Ser. No. 384,593
Int. Cl. A61m *3/00*
U.S. Cl. 128—225 **6 Claims**



1. A hygienic syringe operable from a gas-producing chemical for applying a jet of fluid to a desired body area, comprising, in combination:

a reservoir housing defining a reservoir for containing said fluid;

a nozzle and hose assembly in communication with said reservoir for conveying fluid from said reservoir to said body area;

a chemical carrier including a carrier housing defining a compartment for containing a predetermined quantity of said chemical, said carrier being separate and removable from said reservoir housing and including at least one aperture in said carrier housing for admitting fluid from outside said carrier into said compartment; and

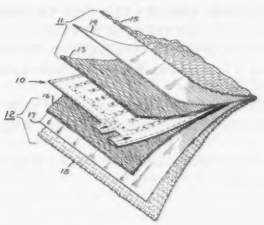
means including an apertured inwardly-convex resilient diaphragm in said reservoir housing dimensioned to facilitate insertion of said chemical carrier through said reservoir housing into said reservoir, said valve providing a substantially vapor tight seal following insertion of said carrier whereby the pressure produced in said reservoir by said chemical in said carrier reacting with said fluid in said reservoir forces said fluid through said nozzle and hose assembly to said body area.

3,867,939

DISPOSABLE, STERILE TEMPERATURE CONTROL APPLICATOR PAD FOR MEDICAL APPLICATION

Francis C. Moore, and Leon R. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 254,715, May 18, 1972, abandoned. This application July 23, 1973, Ser. No. 381,733
Int. Cl. A61f *7/00*
U.S. Cl. 128—254 **20 Claims**



1. An article for applying heat or cold to a human body comprising: a flexible, liquid-tight conduit adapted to pass a hot or a cold fluid between an inlet and an outlet therein, said conduit being conformable to an area of application of the human body to overlie the same; and a covering engaging at least one side of said conduit including a core of soft, flexible absorbent material, an exterior layer of flexible tear-resistant grid material providing a plurality of closed boundaries each defining an aperture, said grid material overlying said core material, and means bonding said grid material to the exterior surface of said core material, said covering being characterized in being substantially free of lint and loose threads, in providing a nonsticking, non-sliding surface when applied to open wounds, and in quickly absorbing liquid with which it is brought into contact; and means holding said covering in engagement with said conduit.

3,867,940

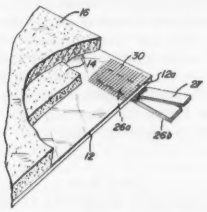
SCRIM REINFORCED DISPOSABLE DIAPER

Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 6, 1973, Ser. No. 386,113
Int. Cl. A41b *13/02;* **A61f** *13/16*
U.S. Cl. 128—287 **6 Claims**

1. A multi-layer diaper comprising: a porous facing layer; a highly porous absorbent batt in face-to-face juxtaposition with said facing layer; a water-impervious backing sheet adhered to said batt; means comprising adhesive tabs attached to said backing sheet for attaching locations at the sides of said backing sheet to other locations on said backing sheet to secure said diaper about the thighs and waist of an infant, said adhe-

sive tabs being located at anchoring locations at the sides and near one end of the backing sheet and adaptable to be attached at securing areas near the other end of the backing sheet; said water-impervious backing sheet being reinforced



against stretching and rupture by having adhered to a minor portion of the surface thereof a flexible structural material having a higher modulus of elasticity than said backing sheet, said minor surface portion being located in at least the vicinity of said anchoring locations.

3,867,941

INSUFFLATION APPARATUS FOR INTRODUCING LIMITED QUANTITIES OF CARBON DIOXIDE INTO THE HUMAN BODY FOR OPERATIVE PURPOSES

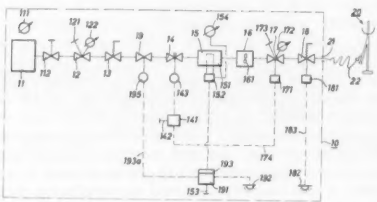
Hans Joachim Lindemann, Kleiner Schaferkamp 43, 2000 Hamburg 6, Germany

Filed Sept. 21, 1973, Ser. No. 399,380

Claims priority, application Germany, Aug. 29, 1973, 7331305

Int. Cl. A61b *17/00*; **F16r** *17/34*

U.S. Cl. 128—303 **3 Claims**



1. In insufflation apparatus for introducing limited quantities of carbon dioxide into the human body for surgical purposes, said apparatus including a housing, a carbon dioxide container (**11**) disposed in said housing, a manometer and a shut-off valve (**19**) for said container, pressure regulating means (**17**), flow measuring means (**15**), a warning signal device (**192**), outlet means for connecting said apparatus to a hysteroscope (**20**), and flow path means extending between said carbon dioxide container and said outlet means, the improvement wherein said flow measuring means (**15**) includes a measured value pickup means (**151**) and is connected within said flow path means between said carbon dioxide container and said outlet means at a location upstream from said pressure regulating means taken in the direction of flow through said flow path means, and wherein said apparatus includes a control device (**191**) comprising a measured value comparator (**152**), a time switch mechanism **193** and a nominal value setting device (**153**) which, together with said shut-off valve, are connected with said warning signal device.

3,867,942

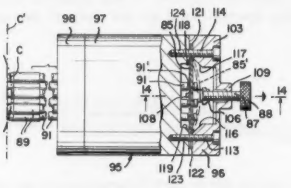
MOTOR-OPERATED MULTIPLE HAIR TRANSPLANT CUTTER TOOL

Frank A. Bellantoni, deceased, late of Yonkers, N.Y. (by Clare Bellantoni, administratrix), and John Walter Tucciarone, Harrison, N.Y., assignors to Taman M. Aseff, Jr., New York and John Walter Tucciarone, Harrison, both of, N.Y., part interest to each

Filed June 8, 1972, Ser. No. 260,853

Int. Cl. A61b *17/32*; **B23b** *45/02*, *47/00*

U.S. Cl. 128—305 **9 Claims**



1. A motor-operated multiple hair transplant patch cutter tool comprising a handle part and a cutter tool head part having a top and a bottom, and the head part being carried upon the handle part, a plurality of cutter tool element drive shanks extending in a parallel relationship with one another and fully through and from the top and bottom of the cutter tool head part, said cutter tool element drive shanks each having its longitudinal axis extending about vertically to the top and bottom of the cutter tool head part, means for securing each shank alternately in each of extended and retracted positions and axially adjustable in the cutter tool head part between the extended and retracted positions, hair patch tissue circular cutter tool elements being carried respectively upon the respective journaled cutter tool element drive shanks, a gear train including drive gears meshed in succession with one another and respectively carried by the respective cutter tool element drive shanks, an electric motor carried in one of the parts and having pinion and drive gear means connected with one of the drive gears of the cutter tool element drive shafts, whereby all of the cutter tool elements may be driven in unison upon operation of the electric motor, each of said cutter tool elements being in the form of a sleeve with a circular cutting edge adapted to cut a patch of hair tissue from the scalp and means on the head part operable for connection to the drive shanks to secure them in either their extended or retracted positions whereby one or more patches of hair may be taken from a hair area of the scalp for the purpose of being transplanted into openings that may have been provided by the cutter tool element in a bald area of a person's head, said means for securing the cutter tool element shanks including curvature-adjusting mechanism for adjusting the cutting tool elements in unison so that the cutting edges of the cutter tool elements can be aligned with one another to provide more or less contour curvature for adapting the cutting edges of the cutting tool elements to the curved rounded portions of the head part, said curvature adjusting mechanism including a bendable plate slidably secured at ends thereof to the cutting tool head part and rotatably receiving the respective cutter tool element shanks and an adjustable member connected to the bendable plate intermediate its length and carried on the cutting tool head to bow the bendable plate from a flat transversely extendable shape, said cutter tool head part including a transversely extending box member, said bendable plate underlying the box member and said cutter tool head part having a main body, said bendable plate having open slots on the ends thereof, said transverse box member being recessed to receive the slotted ends of the bendable plate to permit the working of its ends within the box member while the bendable plate is being bowed or returned to its straightened condition, fastening screws for securing the box

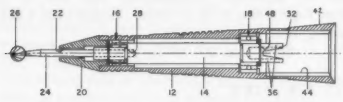
member to the body member extendable through the recesses of the box member and through the slots of the bendable plate to secure the box member in place upon the body member.

3,867,943

SURGICAL DRILL WITH DETACHABLE HAND-PIECE

Harald Nordin, Villeneuve, Switzerland, assignor to Edward Weck & Company, Inc., Long Island City, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,628
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **3 Claims**



1. In a surgical drill of the type comprising:

a. a drive housing;

b. drive means including a drive shaft in said housing;

c. a detachable hand-piece comprising a housing, a driven shaft rotatably mounted in said housing, and a cutting element connectable to said driven shaft; and,

d. means to exchangeably and operatively couple the drive and driven shafts;

e. the improvement which comprises a clutch member attached to said drive shaft, said clutch member being generally cylindrical, having notches thereon and having a central guide member protruding outwardly therefrom; and

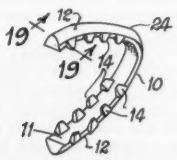
f. a claw member attached to said driven shaft having cooperating arm members extending therefrom toward said clutch member, said arm members adapted to fit into said notches, said claw member having a central guide bore to receive said guide member, said claw and clutch member adapted to mate in operative driving relation when said hand-piece housing is connected to said drive housing while the drive shaft is rotating.

3,867,944

HEMOSTATIC CLIP AND APPLICATOR THEREFOR

Peter B. Samuels, Sherman Oaks, Calif., assignor to Ernest C. Wood and Rene G. Le Vaux, both of Beverly Hills, Calif.; part interest to each

Filed Oct. 27, 1972, Ser. No. 301,609
Int. Cl. A61b *17/12, 17/08*
U.S. Cl. 128—325 **4 Claims**



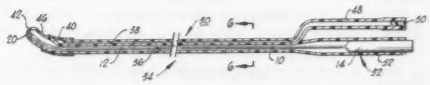
1. A hemostatic clip formed of an elongate, substantially flat strip of a non-toxic material defining a generally V-shaped clip, said clip having spaced aims and being formed of a bail end and open opposite the bail end, said arms having opposing faces providing longitudinally continuous, smoothly curved surfaces a plurality of teeth members on said faces, said teeth members being spaced along the lateral edges of said faces, with a portion of said surfaces extending between the teeth on opposite lateral edges, and a rib extending longitudinally along the strip opposite the faces.

3,867,945

CATHETER STYLETS

Wendell M. Long, 528 N.W. 12, Suite 17, Oklahoma City, Okla. 73103

Filed May 14, 1973, Ser. No. 359,984
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **8 Claims**



1. An improvement for use in combination with urethral catheters of the type having a drainage lumen and a reduced diameter inflation lumen disposed in parallel through the length thereof, a proximal end for insertion in the urinary bladder, and a distal end including an enlarged diameter drainage outlet communicating with the drainage lumen and an inflation control outlet communicating with said inflation lumen, the improvement consisting of a stiffener and former device comprising:

rod means of uniform cross-sectional configuration and reduced length relative to said drainage lumen and extending from proximal to distal ends and having a diameter which is substantially less than that of said drainage lumen for insertion therein throughout the length thereof, said proximal end being formed with an optimal curvature;

a handle portion secured to the distal end of said rod means, said handle portion being formed with uniform cross-section slightly larger than said drainage outlet;

whereby said rod means may be inserted throughout the entire length of said drainage lumen with said handle means tightly received within the drainage outlet of said urethral catheter to stiffen the catheter while reducing its overall circumference for urethral insertion.

3,867,946

BINASOPHARYNGEAL AIRWAY

Robert A. Huddy, 1044 Balboa Dr., Arcadia, Calif. 91006

Filed Oct. 29, 1973, Ser. No. 410,960
Int. Cl. A61m *31/00*
U.S. Cl. 128—351 **1 Claim**

1. A pharyngeal airway comprising

a one-piece tubular member of elastomeric material,

said member having a tubular portion open at one end to receive a gas supply device, and

a pair of spaced nasopharyngeal tube sections communicating with said tubular portion at the opposite end of said tubular portion,

the ends of said tubular sections remote from said tubular portion being inclined oppositely to each other, and

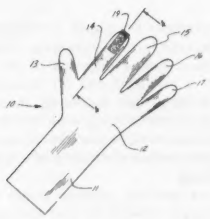
the passages of said tube sections adjacent the apices of said inclined ends curving inwardly toward each other whereby to deflect the respective gas streams into impingement with each other.

3,867,947

AMNIOTOMY GLOVE

Colin B. Schack, 207 S. 94th St., Omaha, Nebr. 68114

Filed Jan. 26, 1973, Ser. No. 327,616
Int. Cl. A61b *17/42*
U.S. Cl. 128—361 **7 Claims**



1. An amniotomy glove for use in rupturing the amniotic membranes comprising:

a sterilizable surgical glove having a palm, a back, a thumb and four fingers; and

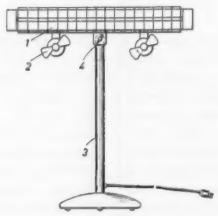
an abrasive strip secured over a portion of the end of one of said fingers with a first portion of said strip secured to the back of said one finger, a second portion of said strip secured to the tip of said one finger and a third portion of said strip secured to the front of said one finger, thus having a portion of said one finger front and tip on both sides of said strip free for permitting tactile sense to the finger of the wearer of said glove.

3,867,948

INFRA RED RADIATION MEANS WITH FAN MEANS

Adolf Kallenborn, Tholeyerstrasse 7, Lebach/Saar, Germany

Continuation-in-part of Ser. No. 139,987, May 3, 1971, abandoned, which is a continuation of Ser. No. 845,673, July 11, 1969, abandoned, which is a continuation of Ser. No. 670,679, Sept. 26, 1967, abandoned. This application Feb. 13, 1973, Ser. No. 332,095
Int. Cl. A61n *5/06*
U.S. Cl. 128—395 **2 Claims**



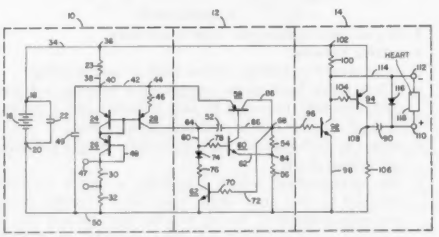
1. Apparatus for skin treatment comprising means for emitting infra-red radiation forwardly towards an area of skin; fan means for directing a current of cooler ambient air forwardly towards said area of skin; a common support upon which said radiation and fan means are mounted, the fan means comprising at least two fans spaced apart along said common support, each of said fans being spaced from said radiation means and the path of the radiation emitted therefrom and directed so as to enable simultaneous action of said radiation and fan means on said area of skin of a living organism of the kind having a dermis, epidermis and a blood circulating system, to heat said area of the dermis and epidermis with the infra-red radiation from said radiation means while cooling the epidermis in said area with the current of cooler ambient air from said fan means to establish a temperature difference therebetween.

3,867,949

CARDIAC PACER WITH VOLTAGE DOUBLER OUTPUT CIRCUIT

Arthur W. Schwalm, Minneapolis, and Jon A. Anderson, White Bear Lake, both of Minn., assignors to Cardiac Pacemakers, Inc., Roseville, Minn.

Filed Apr. 27, 1973, Ser. No. 355,035
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **1 Claim**



1. A cardiac pacer circuit comprising in combination:

a. a constant current source including

(1) a source of direct current potential of a predetermined voltage value having first and second terminals, 2. a series circuit connected between said first and second terminals including first and second resistors and first and second transistors, each having an emitter electrode, a collector electrode and a base electrode, the emitter electrode of said first transistor being connected to the collector and base electrode of said second transistor, the base and collector electrodes of said first transistor being coupled through said first resistor of said first terminal of said source and the emitter electrode of said second transistor being coupled through said second resistor to said second terminal of said source,

3. a third transistor having an emitter, a collector and a base electrode, the base electrode of said third transistor being connected to the emitter electrode of said first transistor and the emitter electrode of said third transistor being coupled to the emitter electrode of said second transistor,

b. an astable multivibrator including:

1. a third resistor and a first capacitor connected in series between said collector electrode of said third transistor and said first terminal of said source,

2. fourth, fifth and sixth transistors each having a base, emitter and collector electrodes, the emitter electrode of said fourth transistor being connected to the emitter electrode of said second transistor, the collector electrode of said fourth transistor being connected to the junction between said third resistor and first capacitor and coupled to the base electrode of said fifth transistor, the emitter electrode of said fifth transistor being connected to the first terminal of said source and the collector electrode of said fifth transistor being coupled through fourth resistor means to the collector electrode of said third transistor and the base electrode of said sixth transistor, said collector electrode of said sixth transistor being connected to the base electrode of said fourth transistor, said emitter electrode of said sixth

transistor being coupled to said first terminal of said source,

c. a voltage doubler circuit including:

1. seventh and eighth transistors, each having an emitter electrode, a collector electrode a base electrode, said base electrode of said seventh transistor being coupled to said junction, the emitter electrode of said seventh transistor being connected to said first terminal of said source, said collector electrode of said seventh transistor being coupled to said second terminal of said source by means of a fifth resistor and coupled to said base electrode of said eighth transistor,

2. said emitter terminal of said eighth transistor being coupled to said second terminal of said source, a sixth resistor coupling said collector terminal of said eighth transistor to said first terminal of said source, and

d. a pair of output electrodes

1. a first of said pair of electrodes being connected to the collector electrode of said seventh transistor,

2. the second of said pair of output electrodes being connected in series with second capacitor means of said collector electrode of said eighth transistor.

3,867,950

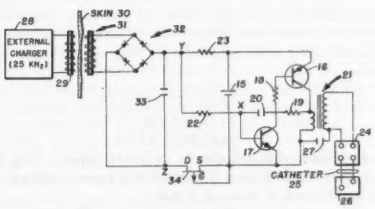
FIXED RATE RECHARGEABLE CARDIAC PACEMAKER

Robert E. Fischell, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed June 18, 1971, Ser. No. 154,492

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **15 Claims**



1. A cardiac pacer adapted to be implanted in the body of a patient and comprising, in combination

a D.C. voltage supply,

pulse generating circuit means connected to said voltage supply for generating output heart stimulating pulses at a predetermined rate,

catheter means equipped with electrode means for applying said output heart stimulating pulses to the patient's heart,

an output transformer having primary and secondary windings which are D.C. isolated from one another,

said primary winding being connected to receive the output heart stimulating pulses generated by said pulse generating circuit means,

said secondary winding being connected to apply said output heart stimulating pulses to said catheter means, and filter capacitor means connected between the primary and secondary windings of said output transformer for preventing periodic signal noise from appearing at said catheter means.

3,867,951

TOBACCO SUBSTITUTE

Paul Buchmann, Basel, Switzerland, and Monique Beringer, Saint Louis, France, assignors to Tamag Basel AG, Basel, Switzerland

Continuation of Ser. No. 232,222, March 6, 1972, abandoned. This application June 11, 1973, Ser. No. 368,587

Int. Cl. A24b *15/00*

U.S. Cl. 131—2 **4 Claims**

1. A tobacco substitute having low cellulose, fat and chlorophyll content which is comprised of a homogeneous mixture of

a. a non-tobacco plant material comprising chaff or bran of cereal plants in an amount of at least ⅔ of said tobacco substitute;

b. fruit extract sufficient to bring the pectin content of the tobacco substitute to about 7.5–10 percent;

c. molasses or fruit extract sufficient to bring thesugar content of the tobacco substitute to at least 10 percent and

d. hydrolyzed natural material of high albumin content sufficient to bring the amino acid content of the tobacco substitute to about 2–4 percent.

3,867,952

CIGARETTE HOLDER STRUCTURE

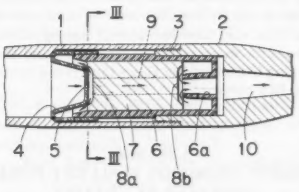
Noboru Fujimura, No. 2007, Go, Aga-machi, Kure, Japan

Filed Feb. 1, 1973, Ser. No. 328,638

Claims priority, application Japan, Feb. 2, 1972, 47-14430; Mar. 25, 1972, 47-35297; Aug. 26, 1972, 47-99886

Int. Cl. A24f *7/04*

U.S. Cl. 131—262 B **8 Claims**



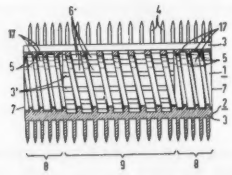
1. A cigarette holder structure comprising a body including a cigarette holding member connected to a mouthpiece member and including a chamber at an intermediate portion of said body, a support member disposed in said chamber, said support member having a central circular shaped portion smaller than said chamber and a peripheral wall extending from the periphery of said central portion in the direction of said cigarette holding member and said peripheral wall diverging outwardly to engage the inner wall of said chamber therefore forming a space between the peripheral wall and the inner wall of said chamber, said peripheral wall being disposed in a manner to provide a space between said central portion and the end of a cigarette held in said cigarette holding member, an opening in said central portion communicating with said chamber , an elongated permanent magnet having a periphery which substantially conforms to the interior of said chamber disposed in said chamber and having disposed in said chamber and having an elongated recess at each end thereof and longitudinal passage means formed between the inner wall of said chamber and the periphery of said magnet, said magnet and said central portion of said support member positioned within the chamber so that the central portion abuts one end of said magnet forming a passage between the associated elongated recess of the magnet and the space between said peripheral wall of the support member and the inner wall of said chamber, said space communicating with the elongated recess at the other end of the magnet through said longitudinal passage means, and said elongated recess at the other end of the mag-

net communicating with a mouth portion of said mouthpiece member.

3,867,953
ARTICLE WITH SPIKES OR BRISTLES MADE OF THERMOPLASTICS

Arno Stohr, 8641 Neuses, Bamberger Strasse 6, Bavaria, Germany

Filed Aug. 10, 1973, Ser. No. 387,365
Claims priority, application Germany, Aug. 11, 1972, 2239560
Int. Cl. A45d *2/02*
U.S. Cl. 132—39 **2 Claims**

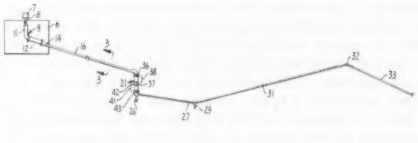


1. An article with bristles or spikes in the form of an extruded tube-like carrier profile, the outer surface of which bearing a plurality of longitudinal ribs cut at their outer ends into bristles or spikes, while said tube-like carrier profile is cut from the inside up to the foot-level of said ribs to form a continuous helix, said tube-like carrier having rim zones with closed inner surfaces and smooth end faces, and the pitch of said helix being less at the rim zones than in the center portion of said tube-like carrier.

3,867,954
CORROSION INHIBITION IN SLURRY PIPELINES OPERATED BY GRAVITY

Robert J. Frey, Pleasant Hill, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed June 6, 1973, Ser. No. 367,630
Int. Cl. B65g *53/30*
U.S. Cl. 137—1 **8 Claims**

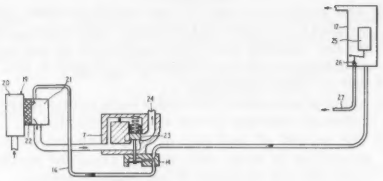


1. A method of transporting a slurry in a pipeline to maintain the pipeline substantially free of corrosion, comprising the steps of introducing a slurry from a source of slurry into a pipeline, flowing the slurry through the pipeline under the action of gravity, deaerating the slurry by maintaining a first downwardly extending portion of the pipeline only partially full of slurry and at a constant slope, and passing the slurry through an air lock and to a point of slurry discharge at a level lower than the source of slurry and while maintaining the slurry substantially free of air, thus substantially eliminating corrosion of the pipeline due to the presence of air therein.

3,867,955
AIR AND/OR VAPOUR SEPARATION DEVICE

Ian John Scott, West Pennant Hills, New South Wales, and Froie Edwin Tessier, North Rocks, New South Wales, both of Australia, assignors to Gilbarco Aust. Ltd., North Ryde, New South Wales, Australia

Filed Nov. 7, 1972, Ser. No. 304,450
Claims priority, application Australia, Nov. 17, 1971, 7072/71; May 10, 1972, 8912/72
Int. Cl. B01d *19/00*
U.S. Cl. 137—179 **1 Claim**

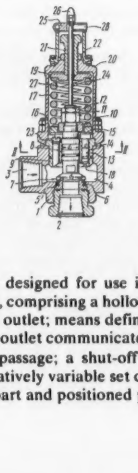


1. A device for purging fouling gas or vapour from a main liquid flow line comprising a main valve located in said flow line said valve including a pressure sensitive valve actuating means; a pilot flow line with an inlet in communication with a gas detection point upstream in the main line flow and a discharge end, said pilot line further including a venturi located between said inlet and discharge; and a further communication between said venturi and said pressure sensitive valve actuating means; whereby presence of air or vapour increases the pressure in the said further communication causing said valve actuating means to close off said main valve and subsequently discharge the air or vapour via said pilot line such that when no air or gas remains in said further communication the reduced pressure therein allows said valve actuating means to re-open said main valve to permit purged liquid therethrough, and wherein the discharge from the said pilot line is to a gas separation means including a vent to atmosphere and a float operated liquid discharge for recycling through said purging device.

3,867,956
SAFETY VALVE

Enver Seifullaevich Ibragimov, 14 Zavokzalneya ulitsa 18, kv. 68, blok 7, and Rudolf Ervandovich Gazarov, ulitsa Gorkogo 5, kv. 6, both of Baku, U.S.S.R.

Filed Apr. 30, 1973, Ser. No. 355,537
Int. Cl. F16k *11/00*
U.S. Cl. 137—269 **3 Claims**



1. A safety valve designed for use in pipelines conveying fluid under pressure, comprising a hollow valve body provided with an inlet and an outlet; means defining a fluid passage via which said inlet and outlet communicate; a valve seat incorporated in said fluid passage; a shut-off member closing said valve seat; a quantitatively variable set of plungers, the axes of which are spaced apart and positioned parallel with and equi-

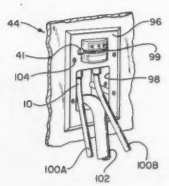
distantly from the axis of the shut-off member; a single spring means loading said set of plungers; guides for said plungers to allow said plungers to reciprocate therein; a set of said plungers serving as a movable element kinematically connected with said shut-off member; and the total area of the end faces of a set of said plungers constituting the active area of the movable element.

3,867,957

WASHING MACHINE WATER SUPPLY AND DRAIN FIXTURE

Albert G. Fehrm, Scituate, Mass., assignor to Symmons Industries, Inc., Braintree, Mass.

Filed Dec. 14, 1974, Ser. No. 442,408
Int. Cl. F16k *11/10*; **F16l** *5/00*
U.S. Cl. 137—360 **8 Claims**



1. An assembly for effecting connection of a washing machine to hot and cold water supply lines and a drain, said assembly comprising a housing dimensioned to be recessed in a building wall, said housing having top, bottom, rear and side walls and a hole in each of said side walls for admitting hot and cold water supply lines to said housing for connection to a duplex valve mounted in said housing, a pan in said housing overlying and supported by said bottom wall, said pan and said bottom wall having aligned openings for admitting a drain pipe to said pan through said bottom wall, means attached to said side walls for mounting said housing to structural parts of said building wall, and a cover plate removably secured to the front of said housing, said cover plate being dimensioned to project laterally beyond said top, bottom and side walls and overlap the building wall in which said housing is recessed, said cover plate having a relatively large opening for providing access to said pan and also to the outlet ports of said duplex valve and an elongate relatively small opening for permitting operation of said valve.

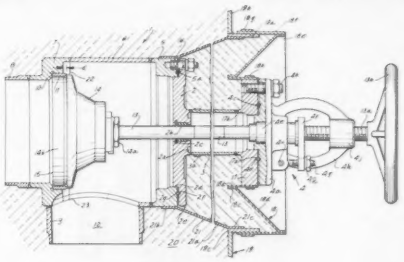
3,867,958

CRYOGENIC VALVE

Ernst Turnwald, Altenmarkt, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed June 13, 1973, Ser. No. 369,732
Claims priority, application Germany, Dec. 22, 1972, 2263064
Int. Cl. F16k *1/04*
U.S. Cl. 137—375 **2 Claims**

1. A valve for a cryogenic installation having a body of thermal insulation, said valve comprising a valve housing forming a valve chamber and provided with a pair of ports connectible in a fluid duct; a sleeve fixed to said housing and extending through said body of thermal insulation toward the exterior thereof; a valve spindle support external of said body of thermal insulation and fixed to said sleeve; a valve spindle extending axially through said sleeve and displaceable at said valve spindle support; a valve member mounted on said spindle and displaceable thereby toward and away from one of said ports; and a cylindrical smooth wall valve seat mounted in said housing around said one of said ports and engageable by said valve member, said housing being formed with a cylindrical smooth wall recess different from that of said seat whereby said recess shrinks to a greater extent than said seat and said seat is anchored into said recess by shrink fitting, said housing including a cover plate removable to afford access to said valve seat through said chamber, said sleeve being affixed to said cover plate and surrounding said spindle while being formed with a flange perpendicular to said spindle and external of said body of thermal insulation, a wall forming part of said installation and confining said body of thermal insulation,



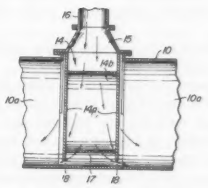
a flexible annular member connecting said flange to said wall, said valve spindle support being bolted to said flange, and an insulating cartridge received in said sleeve and interposed between said sleeve and said spindle, said annular valve seat being anchored in said recess by shrink fitting, said ports being circular and having axes lying perpendicularly to one another, said valve seat projecting annularly beyond said housing into said chamber at said one of said ports so as to lie in the axial projection of the other of said ports.

3,867,959

DOUBLE-ACTING PRESSURIZED SLIDE GATE

Bertus Moret, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 18, 1974, Ser. No. 434,432
Int. Cl. F16l *41/00*
U.S. Cl. 137—602 **5 Claims**



1. In a duct system for carrying noxious gases to one or more outlets, the combination of a duct leading to said one or more outlets and having a gateway extending transversely across said duct upstream from said one or more outlets and defining an entryway for receiving a gate; a gate sufficiently less in area than the cross-sectonal area of the interior flow passage through said duct to provide peripheral passages between said gate and the inner wall face of said duct at opposite sides, respectively, of said gateway; and means for connecting a source of pressurized air over said entryway for supplying a flow of air into said gateway and through said passages, so as to both block the flow of noxious gas past the gate and to supply air to said one or more outlets of the system.

3,867,960
FIVE-WAY REVERSING VALVE

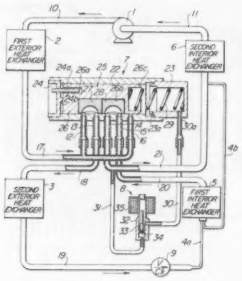
Taisei Hosoda; Hideo Uzuhashi; Nobuyuki Kobayashi, and Masaaki Tanaka, all of Tochigi-ken, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed June 19, 1973, Ser. No. 371,570

Claims priority, application Japan, Nov. 15, 1972, 47-113885

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.6 **4 Claims**



1. A five-way reversing valve comprising:
a cylindrical body;
a cover secured to said body in a fluid-tight manner to close one end of said body;
a spring casing secured to said body in a fluid-right manner to close another end of said body;
five pipes connected to said body and being axially aligned along said body, said pipes communicating with the interior of said body;
a first of said pipes being disposed nearest said cover and the fifth of said pipes being disposed nearest said spring casing, the remaining three of said pipes being disposed between the first and fifth pipes;
plunger means slidably received within said body and provided with a concave portion formed thereon, the ends of said plunger means and said cover and spring casing defining tubular chambers in said body;
a clearance being defined between said plunger means and said body through which high pressure fluid leaks into the tubular chambers provided at both ends of said plunger means;
spring means provided in said spring casing for biasing said plunger means toward said cover;
a pipe connected to said spring casing and communicating with the interior of said spring casing and, through passage means, with the low pressure side of said valve;
a valve controlling mechanism located between said passage means for opening and closing said passage means; and
auxiliary valves loosely and independently received in said concave portion in said plunger means in such manner that each of said five pipes can be in change-over communication with an adjacent pipe of said five pipes by means of said auxiliary valves.

3,867,961
CONTROL VALVE FOR WATER CONDITIONERS

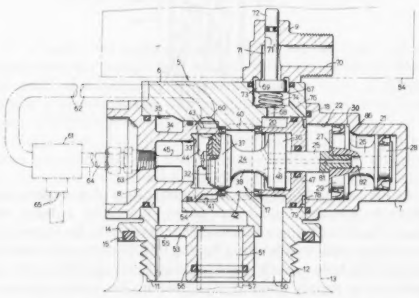
John Rudelick, Milwaukee, Wis., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1973, Ser. No. 416,613

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.29 **9 Claims**

1. A service and regeneration flow control valve for water conditioning apparatus, having a body with a chamber to receive a reciprocable valve spool, and wherein land means on the spool is operable to direct untreated water from an inlet port through said chamber to a first tank port in a service position of the spool at which said land means also directs treated water through said chamber to a service outlet port from a second tank port, characterized by:
A. said body further having a drain port, an injector port communicating with the service outlet, and a brine inlet port at all times communicating with the second tank port;
B. drain passage means in the body having one end portion communicated with the drain port and its other end portion at all times in communication with said first tank port through said chamber;
C. said land means on the spool being operable upon movement thereof to a regenerating position spaced axially from its service position to communicate the inlet port with the injector and service outlet ports but to close it off from the first tank port and from said other end portion



of said drain passage means, and to also close off the service outlet from the second tank port;
D. hydraulic actuating means for the valve spool operable to hold the same in its service position except upon venting of a pressure chamber comprising a portion of said actuating means;
E. a venting passage for said pressure chamber comprising a branch of said drain passage means at all times communicating with said other end portion of said drain passage means;
F. and valve means independent of the valve spool normally closing off communication between the drain port and said one end portion of said drain passage means, but movable to an open position to effect venting of said pressure chamber and said first tank port to the drain port.

3,867,962
BEVERAGE DISPENSING VALVE

Bruce Gerrard, 126 Montgomery Ferry Dr. N.E., Atlanta, Ga. 30309

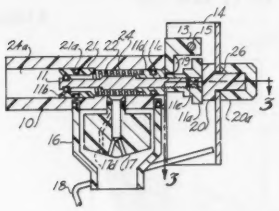
Filed Apr. 24, 1973, Ser. No. 354,084

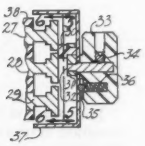
Int. Cl. F16k *19/00*

U.S. Cl. 137—635 **11 Claims**

8. A beverage dispensing valve comprising a valve body, first, second and third plungers operable in said valve body, and an actuating handle, said handle comprising a main body pivotally mounted to said valve body and a selector member mounted to said main body for movement to first and second positions prior to actuation of said handle, said selector member moving integrally with said main body to contact and

actuate said first and second plungers together and to contact and actuate said second and third plungers together upon





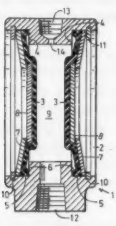
respective actuations of said handle when said selector member is respectively in said first and second positions.

3,867,963

PULSATION REDUCER

Allan Ballard, 1552 Balena Ave., Ottawa, Ontario, Canada (KIG OX3)

Filed Feb. 6, 1973, Ser. No. 330,020
Claims priority, application Canada, Nov. 14, 1972, 156304
Int. Cl. F15d *1/02*; F17d *1/10*
U.S. Cl. 138—46 **11 Claims**



1. A resilient wall structure means for use in an apertured housing for reducing the intensity of pressure variations in a fluid system which is subject to pulsating fluid pressure comprising;

at least one generally resilient frusto-conically shaped apertured spring washer having its peripheral edge resiliently mounted in said apertured housing and having a convex side toward an internal portion of the housing, a plate means supported in aperture covering load bearing relation by inner portions of the convex side of said at least one apertured spring washer, and

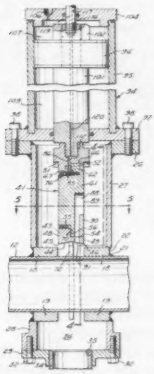
means operatively, interconnecting said at least one apertured spring washer and said plate means to retain said plate means generally concentric in said aperture covering relation against said at least one apertured spring washer, and to permit relative pivotal and radial movement therebetween on initial axial displacement and oscillation of said plate means under the influence of the pulsating fluid pressure and with respect to said peripheral edge of said at least one apertured spring washer.

3,867,964

APPARATUS FOR PLUGGING PIPE

Ronald D. Gardner, Brunswick, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Filed Feb. 1, 1973, Ser. No. 328,740
Int. Cl. F16k *43/00*; F16l *55/10*
U.S. Cl. 138—89 **14 Claims**



1. Apparatus for altering fluid flow in a conduit comprising a fluid tight housing adapted to be secured to the exterior of the conduit, cutter means within said housing, actuator means operable externally of said housing for moving said cutter means from a first position external of said conduit radially through a wall of said conduit to a second position external of said conduit and diametrically opposite said first position, conduit plugging means, said cutter means carrying said plugging means into said conduit when said cutter means moves from said first position to said second position, said plugging means including an annular sealing ring having inside and outside diameters substantially equal in size to the inside and outside diameters respectively of the conduit wall, hydraulic means for moving said annular sealing ring, independently of a force developed by pressure in a section of conduit being sealed by said ring on an area defined by the interior of the ring, axially into engagement with a severed end face of said conduit wall formed by said cutter means as it is moved from said first position to said second position.

10. Apparatus for altering the flow of fluid in a conduit comprising a fluid tight housing adapted to be secured to the exterior of the conduit, means in the housing for cutting through the conduit wall to divide the conduit into two sections, said cutting means carrying selectively movable seal means to seal one section of the conduit from fluid communication with the interior of the housing, and flow passage means in said cutting means defining a flow path from the other conduit section into the interior of the housing while said one section is sealed by said sealing means.

3,867,965

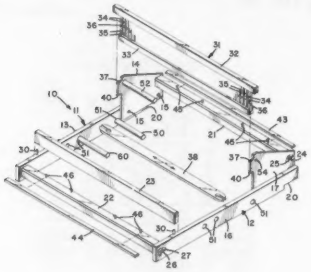
LOOM

James E. Hanson, Anoka, Minn., assignor to Trend Development Corporation, Minneapolis, Minn.

Filed Aug. 26, 1974, Ser. No. 590,249
Int. Cl. D03d *29/00*
U.S. Cl. 139—33 **4 Claims**

1. In a loom:

a side assembly;
means in said side assembly for pivotally mounting a warp beam and a cloth beam;
means in said assembly for receiving a cross beam so that a line between said cross beam and said warp beam defines a neutral shed for the loom;
means in said assembly for receiving a string heddle support;



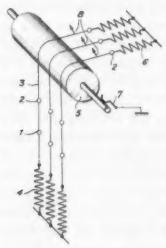
means in said assembly for maintaining a rigid heddle in both an up shed position and a down shed position, the neutral shed of said loom being the same for string heddles and for the rigid heddles;
and means in said assembly for receiving a guide for warp threads passing out of said neutral shed between the string heddles and the warp beam.

3,867,966

ELECTRO-MECHANICAL DEVICE FOR FORMING A SHED IN A WEAVING MACHINE

Dietrich Wieland, Wendelstein, Germany, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Oct. 16, 1972, Ser. No. 297,697
Claims priority, application Germany, Oct. 16, 1971, 2151280; Nov. 13, 1971, 2156534; Nov. 13, 1971, 2156533
Int. Cl. D03c *13/00, 19/00*
U.S. Cl. 139—55 **7 Claims**



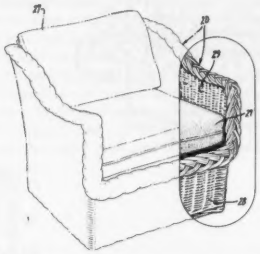
1. In combination with a plurality of heddles for forming a shed in a weaving machine; at least one rotatable drum, a plurality of electrically conductive harness cords disposed over said drum, each respective cord being connected to at least one respective heddle, [and] means for creating an electrically attractive force between selected cords of said harness cords and said drum for movement of said selected cords with said drum to displace said heddles connected thereto into a predetermined position, and means for retaining the displaced heddles in said predetermined position during deactivation of said means for creating an electrically attractive force.

3,867,967

METHOD OF FURNITURE MANUFACTURE

Peter A. Rocchia, and Robert M. Steffy, both of San Francisco, Calif., assignors to The Wicker Works, San Francisco, Calif.

Division of Ser. No. 319,553, Dec. 29, 1972, Pat. No. 3,792,899. This application Oct. 17, 1973, Ser. No. 407,101
Int. Cl. A47c *5/00*
U.S. Cl. 139—424 **8 Claims**



1. A method for forming a portion of a woven piece of furniture having a braided periphery integral with the warp of the weave and generally transverse thereto to provide structural strength to the furniture comprising the steps of
a. mounting one end of each of a plurality of flexible strands in spaced-apart, side-by-side relationship extending in a line to form the warp of the weave,
b. weaving a plurality of adjacent flexible strands on alternate sides of said warp to form the woof of the weave, extending only partially along said warp strands away from the mounted ends thereof so that a substantial portion of said warp strands extend beyond said weave, said warp and weave defining a woven surface,
c. bending a first warp strand extension toward said woven surface and in a selected direction on alternate sides of subsequent ones of said warp strand extensions in said line,
d. bending a second one of said warp strand extensions generally in said selected direction across said bent first warp strand portion on alternate sides of subsequent ones of said warp strand extensions in said line,
e. repeating steps (d) and (e) in sequence with third and subsequent warp strands to form an integral braided periphery generally transverse to the warp of the weave including the extending portions of said warp strands along said line thereacross,
f. severing warp strand portions projecting from said braided periphery, the majority of said warp strand portions changing directions in the braid at least twice to form crossing generally S-shaped curved portions before severing.

3,867,968

APPARATUS FOR BINDING MESH MATS IN STACKS

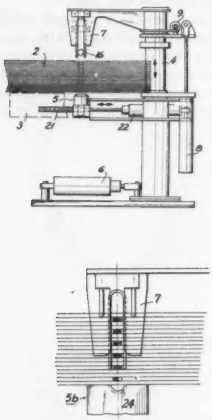
Klaus Ritter, and Hans Gott, both of Graz, Austria, assignors to Firma Evg Entwicklungs-u Verwertungsgesellschaft, Graz, Austria

Filed June 22, 1973, Ser. No. 372,591
Claims priority, application Austria, June 27, 1972, 5553/72
Int. Cl. B21f *45/00*
U.S. Cl. 140—93 D **8 Claims**

1. Apparatus for binding together aligned and stacked wire-mesh mats, wherein the improvement comprises
a binding wire feeder having an elongated slot, arranged to receive a length of binding wire bent into hairpin shape with the ends thereof protruding from said elongated slot and to push said hairpin shaped wire over aligned wires in said stack of wire-mesh mats; and
a binding head movable into alignment with said slot of said binding wire feeder and adapted to bend over the two protruding ends of said hairpin wire, thus preventing

withdrawal of said hairpin wire and binding said stacked mats together,

wherein a supporting arm is provided to support said stack of mats to be bound, and



said binding-wire feeder, said binding head and said supporting arm are pivotable about an axis perpendicular to the plane of said stacked mats.

3,867,969

CONTROL OF DUST DURING HANDLING OF MATERIALS

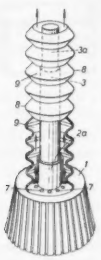
George William Garnett, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 10, 1973, Ser. No. 395,597

Claims priority, application Great Britain, Sept. 19, 1972, 43285/72

Int. Cl. B65b *1/28*

U.S. Cl. 141—59 **8 Claims**



1. Apparatus for controlling dust clouds caused by the loading into containers of bulk solid material falling by gravity through a chute, comprising a base plate, an aperture substantially centrally located in the base plate and adapted to engage the lower end of the chute, a flared skirt depending from the base plate and adapted to cover the heap of material formed as the material falls from the chute, a tubular cover secured by its lower end to the base plate and which completely surrounds the aperture and encloses the chute with an annular space between the chute and the tubular cover, and a plurality of openings in the base plate, between the aperture and the tubular cover, providing access for air and dust from below the base plate into the annular space.

3,867,970

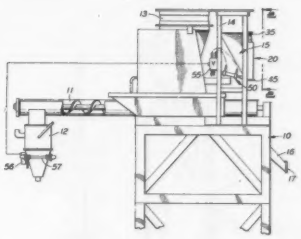
MIXING AND BAGGING MACHINE FOR DRY MIXES

James E. Winchester, Sr., 2651 MacVey, Worthington, Ohio 43085

Filed Dec. 14, 1973, Ser. No. 424,878

Int. Cl. B65b *1/12*

U.S. Cl. 141—67 **9 Claims**



1. A compartment for receiving material to be fed therefrom in preselected amounts having a substantially upright vertical wall with a vertically-extending outlet leading laterally therefrom and other wall structure cooperating therewith to feed the material by gravity into contact with said upright wall and continuously through said vertically-extending outlet, and means for controlling the flow of material through said vertically-extending outlet, said means comprising a substantially vertically disposed flow control chute extending vertically along said upright vertical wall and in lateral communication with said compartment through said vertically-extending outlet, said vertically-extending flow control chute having a downwardly-opening exit opening at its lower end through which the material which flows into and through said chute can drop, a substantially horizontally-extending gate normally located below said exit opening to close it, and means for retracting said gate to expose said opening to drop the material accumulated in said chute.

3,867,971

COMBINATION HANDBAG AND TOY, CONTAINER AND FIGURINE, OR THE LIKE

Isaac Hazan, Brooklyn, N.Y., assignor to Trissa Industries, Inc., New York, N.Y.

Filed July 19, 1973, Ser. No. 380,657

Int. Cl. A45c *1/00*

U.S. Cl. 150—28 R **8 Claims**

1. A combined support and toy or figurine carried thereby, comprising container means for containing articles, said container means having front and rear walls and an open top, and closure means operatively connected with said container means for movement between a closed position closing said container means and an open position giving access to the interior of said container means, said closure means being hinged to a top edge of said rear wall and having an upper portion extending across and closing said open top of said container means and a front portion overlapping said front wall of said container means when said closure means is in said closed position thereof, and simulating means for rendering said container means and closure means connected thereto additionally useful, said simulating means having a configuration simulating that of a living being which has a body and a head, and said simulating means including a sheet material portion carried by said front portion of said closure means and simulating said body, and said simulating means including a block portion which simulates said head and being carried by

said upper portion of said closure means at an end of said body representing a neck of the living being where the head is connected to the body, said sheet material portion of said simulating means being situated at an exterior surface area of said front portion of said closure means and said block portion of said simulating means extending outwardly from said upper portion of said closure means so that said simulating means is visible at the exterior of said container means, and fastening means fastening said block portion to said upper portion of said closure means, said closure means being made of a flexible sheet material with said front portion being swung approximately through 180° while said upper portion of said closure means is swung approximately through only 90° when said closure means is displaced from said closed to said open position thereof, so that in the open position of said closure means said block portion has with respect to said sheet material portion of said simulating means a position which is different from the relative position between said block portion and sheet material portion when said closure means is in said closed position thereof.

3,867,972

NUTS AND LOCKNUTS HELICOIDALLY COUPLED IN ONE SINGLE UNIT FOR TIGHTENING AT A CONTROLLED TORSION

Cesar Fernandez Veraud Gonzalez, Av. Unidad Modelo No. 10, Colonia Unidad Modelo, Mexico

Filed Mar. 7, 1973, Ser. No. 338,918

Int. Cl. F16b *31/02*

U.S. Cl. 151—15 **4 Claims**

1. An improved locking nut forming a single unit to exercise a determinate and controlled torque including:

a torque nut having an internal bore, top and bottom surfaces and an even number of polygonal faces of substantially equal width;

said torque nut containing first and second protuberances extending from said bottom surface of said torque nut and spaced opposite each other, each of said first and second protuberances having a width substantially no greater than the width of said faces of said torque nut;

said protuberances of said torque nut each having a bottom surface;

said torque nut having an internal threaded surface along said internal bore of said torque nut and the interior of said protuberances of said torque nut;

said bottom surfaces of said torque nut and said protuberances of said torque nut being helicoidal and inclined to the same degree, and being inclined oppositely to the inclination of said threaded surface;

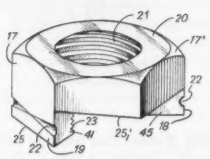
a lock nut having an internal bore, top and bottom surfaces and having the same number of polygonal faces of substantially equal width as said torque nut;

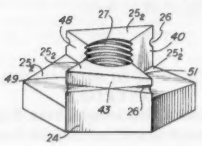
said lock nut containing first and second protuberances extending from said top surface of said lock nut and spaced opposite each other, each of said first and second protuberances of said lock nut having a width substantially no greater than the width of said faces of said lock nut;

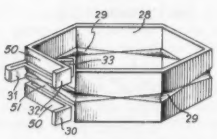
said protuberances of said lock nut each having a top surface;

said lock nut having an internal threaded surface along said internal bore of said lock nut and the interior of said protuberances of said lock nut;

said top surfaces of said lock nut and said protuberances of said lock nut being helicoidal with the same degree of inclination as the degree of inclination of the bottom surfaces of said torque nut and its protuberances, and said top surface of said lock nut and its protuberances being inclined oppositely to the inclination of said threaded surface;







said bottom surfaces of said protuberances of said torque nut engaging said top surface of said lock nut and said top surfaces of said protuberances of said lock nut engaging said bottom surface of said torque nut when said torque nut and said lock nut are joined;

said first and second protuberances of said torque nut and said lock nut having grooves outer surfaces; and

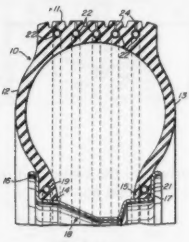
spring means, comprising a band with said even number of polygonal sides of equal width and including inner protuberances which engage said grooved outer surfaces, for preventing slipping of the engagement between said torque nut and said lock nut.

3,867,973

PNEUMATIC TIRE WITH EMBEDDED RING MEANS

Henry Cozzolino, and Robert L. Gastineau, both of Dayton, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Jan. 30, 1973, Ser. No. 328,070
Int. Cl. B60c 9/00
U.S. Cl. 152—153 11 Claims



1. In a pneumatic tire having tread, side wall and bead portions, ring-like means unitarily contained in one or more portions circumferentially of the tire for reinforcement and/or cooling purposes, said ring-like means including one or more hollow ring elements in the body of the tire near the tread portion, each of said elements having vent holes therein some of which define a means providing for a flow of tire material into said ring element for anchoring purposes and others thereof providing for air flow to and from the ring element interior, said tire having its tread portion perforated to provide continuing air flow passages from the tread surface to and from the interior of said ring element.

3,867,974

EMERGENCY TIRE CHAIN

Aulton E. Crockett, Rt. 2, P.O. Box 1032, Cheyenne, Wyo. 82001

Filed Sept. 6, 1973, Ser. No. 394,566
Int. Cl. B60c 27/06
U.S. Cl. 152—213 R 6 Claims

1. In a traction device for use with a power-driven wheel of a vehicle in which a pair of flexible, longitudinally inextensible side members have flexible cross members interconnecting the side members at longitudinally spaced locations, connection means secured to one end of the side members and adapted to be releasably connected to the vehicle wheel, and anchor means are disposed at the ends of the side members opposite to the connection means adapted to be anchored to the ground, the improvement comprising:

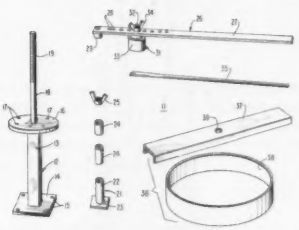
spacer members of limited flexibility interconnecting the side members at longitudinally spaced locations spaced between and parallel to said cross members, said spacer members being adapted to maintain a predetermined spacing between the side members and a substantially straight orientation of said flexible cross members so that the cross members are substantially perpendicular to said side members, said spacer members being formed of metal rods each having a substantially semi-circular body portion, said semi-circular body portion extending substantially normal to and downwardly from the side members, and fastening means at opposite ends of each spacer member rigidly attaching each said spacer member to said side members.

3,867,975

TIRE CHANGING TOOL

George Howard Johnson, 1045 Red Bird Rd., Augusta, Ga. 30904

Filed Feb. 23, 1973, Ser. No. 335,066
Int. Cl. B60c 25/06
U.S. Cl. 157—1.2 2 Claims



1. A tool for mounting and dismounting a tire upon small diameter wheel rims having center openings therein comprising; a changer stand having a center post to which a base plate is affixed at one end and a hub plate to the other end, the hub plate being affixed perpendicularly to the center post and having lug bolt locating apertures disposed in such a pattern as to fit a variety of wheel rims, a center bolt assembly secured to the hub plate along the longitudinal axis of the changer stand, a roll bar assembly comprising an elongated roll bar with proximal and distal ends wherein a bushing is located adjacent the proximal end and is rotatively disposed upon the center bolt assembly, the elongated roll bar having a plurality of locating apertures at predetermined points along the roll bar for adjustably mounting a bead roll assembly thereon, the bead roll assembly comprising a through bolt and a cylindrical roller rotatively mounted upon the through bolt, said bead roll assembly being selectively positioned between the distal and proximal ends of the roll bar assembly to operatively engage the bead portion of the tire engaging the wheel rim, reinforcing means removably associated with the center bolt assembly, said means including an adaptor having an elongated tubular portion which is capable of being placed about the center bolt assembly and located in close juxtaposition with the hub plate, an apertured base portion fixedly attached to one end of the tubular portion so that it lies adjacent to the hub plate whereby the elongated tubular portion of the adaptor cooperates with the base portion to reinforce the center bolt assembly.

3,867,976

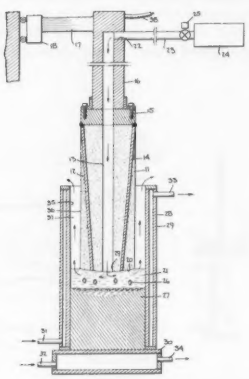
ELECTROFLUX MELTING METHOD AND APPARATUS

Francis Sardovia Suarez; William Lawrence Mankins, both of Huntington, W. Va., and James Earl Roberts, Proctorville, Ohio, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,235
Int. Cl. B22d 27/02
U.S. Cl. 164—52 8 Claims

1. In an electroflux melting process wherein metal is melted in a container by heat from an electric current passing be-

tween an electrode and a bath of molten flux in the container and in contact with the electrode, the improvement comprising passing a flow of inert gas through the molten flux in a metal-melting zone of the flux bath.



3,867,977

METHOD OF CASTING COPPER ANODES USING A PREHEATED MOLD COATING

Ramon C. Cruz, Hayden; Clyde L. Light, Winkleman, and Donald J. Nelson, Kearny, all of Ariz., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 4, 1974, Ser. No. 430,740
Int. Cl. B22c *3/00*
U.S. Cl. 164—72 **4 Claims**

1. In the casting of copper anodes wherein copper molds are successfully filled with molten copper and the solidified anodes are successively removed therefrom on a cyclic basis, and coatings of a release material are applied as a slurry thereof in a liquid medium to the internal surfaces of the respective molds prior to the introduction of the molten copper thereinto, the improvement wherein the slurry is heated and applied to the interior surfaces of said molds at a temperature of from about **150°** to about **200°F**.

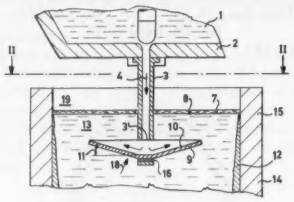
3,867,978

METHOD AND APPARATUS FOR INTRODUCTION OF STEEL INTO A CONTINUOUS CASTING MOLD

Nils Erik Johansson, Bedford Hills, N.Y., and Michael Cygler, Colonia, N.J., assignors to Concast Incorporated, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,597
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 **27 Claims**

1. A method for the introduction of steel into the liquid metal pool of a continuous casting mold of a continuous casting installation, wherein a casting jet which is enclosed at its periphery at all sides for casting of slabs or blooms is guided beneath the level of the molten bath of the liquid metal pool in the continuous casting mold and thereafter deflected out of its original position, the improvement comprising the steps of guiding the casting jet substantially immediately after its deflection substantially only at its underside to impart thereto an upwardly directed flow component and freely exposing the upper surface of the casting jet, and permitting the freely exposed upper surface of the casting jet to freely admix with the steel of the liquid metal pool.

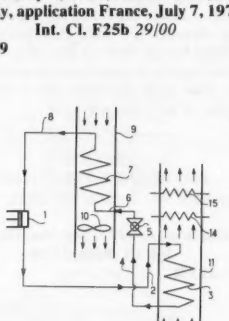


3,867,979

AIR-CONDITIONING METHOD AND APPARATUS WITH HEAT PUMP

Jean Carrasse, Antony, and Denise Desbrosses, Villemoisson s/Orge, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed July 6, 1971, Ser. No. 159,681
Claims priority, application France, July 7, 1970, 70.25409
Int. Cl. F25b *29/00*
U.S. Cl. 165—29 **5 Claims**



1. Air-conditioning apparatus employing a heat pump of the kind continuously circulating air between a space to be conditioned and external ambient air and continuously performing inverse heat exchange operations relative to a refrigerant respectively on the intake air to said space and on the exhaust air therefrom, comprising

a compressor, a condenser, and an evaporator c onnected in a closed circuit to form a heat pump and providing for the circulation of a refrigerant;

means included in said circuit between said condenser and said evaporator for the expansion of said refrigerant;

a first duct including air moving means for drawing exterior air over said condenser into an enclosed space;

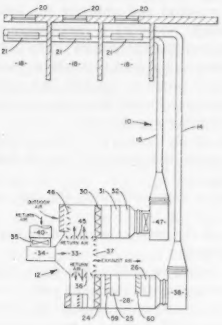
a second duct including air moving means for the exhaust of interior air over said evaporator from said enclosed space;

and means included in said first duct for raising the temperature of condensation of said refrigerant within said condenser by reducing the cooling effect of the flow of exterior air over said condenser.

3,867,980
AIR CONDITIONING SYSTEM

Darwin G. Traver, DeWitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,076
Int. Cl. F24f *13/06*
U.S. Cl. 165—54 2 Claims



1. An air conditioning system for conditioning the air in a plurality of enclosed areas in a building, each of the enclosed areas having a peripheral portion requiring conditioned air having a variable temperature and an interior portion requiring conditioned air at a constant temperature, said system comprising:

a. conditioned air supply terminal disposed in the ceiling of an individual enclosed area;

b. first central station conditioning apparatus to provide conditioned air at a varying temperature level;

c. means to supply said varying temperature conditioned air to a first portion of said air terminal;

d. second central station conditioning apparatus to provide conditioned air at a predetermined temperature level;

e. means to supply said conditioned air from said second central station apparatus to a second portion of said air terminal, said terminal including means to maintain the conditioned air in said first portion separate from said conditioned air in said second portion; and

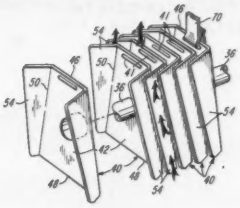
f. said terminal further comprising discharge means, a first section thereof being in communication with said first portion of said terminal, said first section directing the varying temperature conditioned air across the ceiling towards the peripheral wall of said area, said conditioned air compensating for transmission gains or losses caused by heat being transmitted through said peripheral wall, a second section of said discharge means being in communication with said second portion of said terminal to discharge the conditioned air from said second portion across the ceiling towards the interior portion of said area.

3,867,981
HEAT EXCHANGE STRUCTURE

Thomas D. Monroe, Memphis, Tenn., assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed Sept. 29, 1972, Ser. No. 293,476
Int. Cl. F24h *3/00*; F28f *1/30*
U.S. Cl. 165—55 4 Claims

1. In a heat exchanger including an elongated housing adapted to be mounted adjacent a baseboard, an elongated heating member extending longitudinally within said housing, and a plurality of horizontally spaced vertical fins each having an opening for receiving said heating member and in heat conducting relation therewith, the improvement wherein each of said fins includes a trapezoid-shaped base wall integrally connecting a pair of inclined downwardly facing flanges each projecting outwardly from said base wall to form an obtuse angle therewith, each of said fins being positioned in interfitting relation with each adjacent fin and with the corresponding adjacent said flanges disposed in overlapping parallel spaced relation, and the cross-section area between each pair

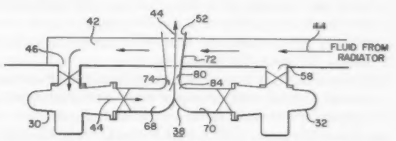


of adjacent fins progressively decreasing from the bottom of the fins towards the top of the fins to provide for scrubbing of the air with said downwardly facing inclined flanges of each fin and a progressively increasing velocity of the heated air flowing upwardly between said fins.

3,867,982
ELECTRICAL APPARATUS HAVING A STATIC VALVE SYSTEM

Dale White, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1973, Ser. No. 411,498
Int. Cl. F28d *15/00*; H01f *27/10*
U.S. Cl. 165—107 8 Claims



1. An enclosure for electrical apparatus, comprising:

a tank containing a fluid coolant;

radiator means which is attached to said tank and through which the coolant flows;

header means into which the coolant which flows through said radiator means is directed;

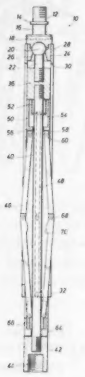
first and second pumps each having an intake opening and a discharge opening, with the intake opening of each pump connected in flow communication relationship with an opening in said header means; and

a discharge tube having a first opening connected in flow communication relationship with the discharge opening of said first pump, a second opening connected in flow communication relationship with the discharge opening of said second pump, and a third opening located in flow communication relationship with the coolant in said tank; said discharge tube having a first restriction located between the first opening and the third opening, and a second restriction located between the second opening and the third opening, with the size of the first restriction having adequate dimensions to provide a pressure head at the second restriction, due to fluid which flows through the first restriction when the first pump is operating, which is substantially equal to the pressure head of the fluid at the intake opening of the second pump, and with the size of the second restriction having adequate dimensions to provide a pressure head at the first restriction, due to fluid which flows through the second restriction when the second pump is operating, which is substantially equal to the pressure head of the fluid at the intake opening of the first pump.

3,867,983
KICK-OVER TOOL

William C. Neal, Rt. 2 Box 23-B, Cut Off, La. 70345

Continuation-in-part of Ser. No. 338,105, March 5, 1973, Pat. No. 3,828,853. This application Feb. 4, 1974, Ser. No. 439,082
Int. Cl. E21b 7/06
U.S. Cl. 166—117.5 10 Claims

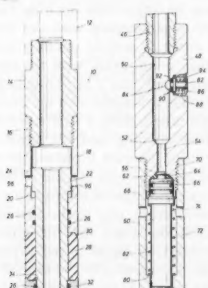


1. A kick-over tool for installing or removing apparatus in side pockets in wells, comprising:
an elongate body;
swivel means at the top of said elongate body; lock means immobolizing said swivel means, said lock means incorporating a telescoping sleeve about said body which has one position locking said swivel means;
centering arm means on said body at multiple locations about the circumference thereof;
said sleeve means having openings through which said arm means extend, said openings selectively maintaining said arm means in withdrawn and extended positions;
means at the lower end of said elongate body adapted to be connected to an installation or retrieval tool; and,
said lock means and said sleeve means enabling selected extension of said arm means to cause said elongate body to move about said swivel means.

3,867,984
TUBING PLUG

Alex Dufrene, P.O. Box 194, Des Allemands, La. 70030

Continuation-in-part of Ser. No. 308,327, Nov. 21, 1972, Pat. No. 3,809,157. This application Sept. 10, 1973, Ser. No. 396,091
Int. Cl. E21b 33/128
U.S. Cl. 166—188 8 Claims

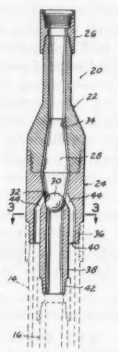


1. A plug for use in a tubing string comprising:
a hollow, elongate outer mandrel;
an elongate, hollow inner mandrel telescoped within said outer mandrel and movable relatively upwardly and downwardly thereof and having a portion extending therebelow;
an annular, radially outwardly expandable member received in telescoping arrangement about the lower portion of said inner mandrel and abutting the lower end of said outer mandrel;
means received on the exterior of the lower portion of said inner mandrel below said expandable member for abutting the lower portions thereof and capturing said expandable member for radial expansion on upward movement of said inner mandrel;
means for selectively closing the lower portion of said outer mandrel against the upward flow of fluid through the tubing string;
an axial passage communicating through said inner mandrel;
a valve cage of elongate external configuration connected with said passage;
check valve means in said valve cage including a valve element and a cooperative valve seat;
opening means in said valve cage to the exterior from said passage means with said valve means interposed therebetween to limit flow in one direction through said passage means; and,
a compressible spring operable between said outer and inner mandrels selectively moving them relatively to expand said expandable member.

3,867,985
APPARATUS FOR AND METHOD OF PREVENTING BLOW-OUT WHILE REMOVING A FISH WITHIN WASH PIPE FROM A BOREHOLE

Thelton E. Wilkinson, P.O. Box 320, Houma, La. 70091

Filed Jan. 11, 1974, Ser. No. 432,787
Int. Cl. E21b 31/00; F16k 17/24
U.S. Cl. 166—224 A 2 Claims



2. A blow-out control tool for a well containing a pair of concentric well strings, comprising:
an elongated sleeve bushing including a top sub coaxially joined with a bottom sub and adapted to be connected, at its depending end, with said well strings,
the bores of said top sub and said bottom sub being divergently tapered from a point intermediate their respective ends toward their juncture to define a valve containing chamber intermediate the ends of said sleeve bushing and a valve seat at the respective end limit of the valve containing chamber,

said bottom sub having at least one port in its wall forming a fluid passageway between its depending end and the valve chamber above the lowermost valve seat; and, fluid flow direction control including a valve within said sleeve bushing.

3,867,986

METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A SUBTERRANEAN FORMATION

Claude T. Copeland, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 28, 1974, Ser. No. 437,443
Int. Cl. E21b *43/04, 33/138*
U.S. Cl. 166—276 **10 Claims**

1. A method of forming a permeably consolidated particulate mass in communication with a permeable subterranean formation which comprises:

a. forming a pumpable slurry by mixing together a particulate material, an epoxy resin-solvent mixture, a curing agent, a coupling agent, a carrier liquid and from about 0.1 to about 1 percent by volume based on the volume of said carrier liquid of an organic anionic surfactant, said particulate material is present in an amount ranging from 7 to about 20 pounds per gallon of liquid in said slurry, said resin-solvent mixture comprises an epoxy resin and an organic solvent for said resin which in conjunction with the resin is only partially miscible in the carrier liquid at ambient temperatures, said resin being present in an amount ranging from about 2 to about 10 pounds per 100 pounds of particulate material, and said resin solvent mixture containing from about 55 to about 85 per cent by weight of said resin,

b. introducing said slurry through a well bore and into communication with said permeable formation, and

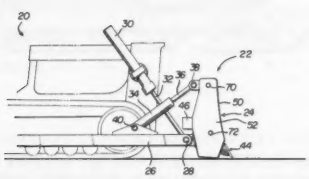
c. curing said slurry in place to form a consolidated permeable mass.

3,867,987

VIBRATORY BULLDOZER BLADE

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed July 13, 1973, Ser. No. 378,869
Int. Cl. A01b *35/32*
U.S. Cl. 172—40 **25 Claims**



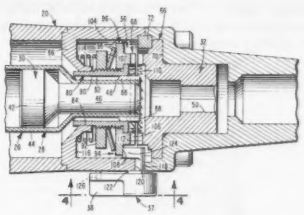
1. A vibratory plow, comprising, in combination, a plow blade having a relatively rigid lower cutting edge portion and a plurality of separate, upwardly extending resilient arms integral with said lower edge portion, a structural support on opposed sides of said blade pivotally supporting said arms on first and second common fixed pivot axes, said first common fixed pivot axis located adjacent the upper distal ends of said arms and said second common fixed pivot axis spaced between said first pivot axis and said lower blade edge portion, and a vibrator means connected to said blade between said first and second blade pivot axes adapted to vibrate said arms and said lower cutting edge portion about said common axes.

3,867,988

POWER TOOLS

Heinrich P. Koehler, 212 Robinhood La., Camillus, N.Y. 13031, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1973, Ser. No. 328,914
Int. Cl. B25d *11/00*
U.S. Cl. 173—48 **5 Claims**



1. A power driven device, comprising: a casing; a tool holder rotatably mounted in said casing; means which can be cycled through impacting and return strokes for imparting axial impacts to a tool mounted in said tool holder; means including a driving member and a driven member having means providing a drive connection therebetween for so connecting said impact imparting mechanism to said tool holder that said mechanism rotatably indexes said tool holder and the tool mounted therein during one of the strokes in each cycle thereof but does not effect rotation of the tool holder in the other of said strokes; and means selectively operable to effect a relative displacement between said driving and driven members which will interrupt the drive connection therebetween so that said tool can be axially impacted without rotating it, the last-mentioned means including a shaft rotatable in said casing about an axis normal to the path of relative movement between the driving member and the driven member, cam means extending from said shaft which is engageable with one of said driving and driven members, and an actuator located externally of the casing and rotatable with said shaft for turning said shaft and causing the cam means to displace the member engageable thereby relative to the other of said driving and driven members.

3,867,989

PULLDOWN MECHANISM FOR ROTARY DRILL APPARATUS

Robert W. Hisey, Richardson, and Ray M. Mitchhart, Dallas, both of Tex., assignors to Gardner-Denver Company, Quincy, Ill.

Filed May 21, 1973, Ser. No. 362,576
Int. Cl. E21b *15/00, 19/08*
U.S. Cl. 173—147 **12 Claims**

1. In an earth drilling apparatus:

an elongated upstanding mast;

a rotatable drill string including at least one elongated drill pipe section;

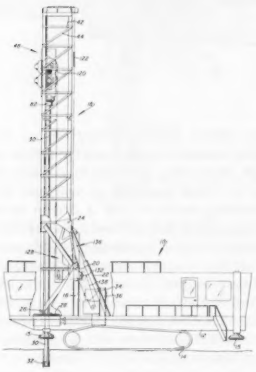
rotary drive means engaged with said drill pipe for rotating said drill string;

a frame including coupling means mounted thereon and connected to one end of said drill pipe and mounted on said mast for linear movement therealong to transmit pulldown and hoisting forces to said drill string, first and second rotatable shafts independently mounted on said frame in spaced apart and parallel relationship and including means positively engaged with means mounted on said mast for effecting movement of said frame along said mast to exert a pulldown force on said drill string in response to rotation of said shafts;

a pair of elongated flexible chains forming closed loops and respectively drivingly engaged with sprockets fixed on

said shafts and on a drive shaft mounted on said apparatus;

a pair of tensioning devices, one engaged with each chain of said pair, each tensioning device including chain engaging means mounted for movement on a frame and a pressure fluid cylinder connected for biasing said chain engaging means to apply tensioning forces to said chain, and said cylinders are interconnected so that the fluid pressure in said cylinders provides equal biasing forces on said chain engaging means to thereby apply substantially equal tensioning forces to each of said chains and substantially equal driving torque on said shafts; and



a second pair of tensioning devices, one tensioning device engaged with each chain of said pair, each tensioning device of said second pair including rotatable chain engaging means disposed for movement on a frame and pressure fluid cylinder means for engaging said rotatable chain engaging means to apply chain tensioning forces thereto and adapted to permit movement of said rotatable chain engaging means in response to a change in chain path length between said drive shaft and said chain engaging means on said tensioning devices.

3,867,990

WEIGHING APPARATUS FOR TRUCK AND VEHICLE LOADS

Malcolm Anthony Askew, 64 Moonshine Rd., Upper Hutt, New Zealand

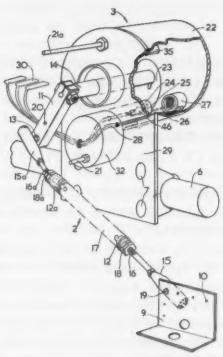
Filed May 23, 1974, Ser. No. 472,769

Claims priority, application New Zealand, June 1, 1973, 170913

Int. Cl. G01g *19/08*

U.S. Cl. 177—137 **12 Claims**

1. An apparatus for providing an indication of the weight of a load on a vehicle or on any part of the vehicle comprising a sensing means operable between a moving part and a stationary part of the vehicle and sensing the distance between the stationary part and the moving part, a transducer unit converting any alteration of the said distance detected by the sensing means into a proportional electric property and an electrical gauge receiving the output from said transducer unit characterised in that the transducer unit includes a spindle associated with a light beam, a shutter for the light beam and a photoelectric cell receiving the light beam, the arrangement being such that alteration of the said distance detected by the sensing means is followed by proportional rotation of the spindle which causes the light beam to be proportionately modified by the shutter in a manner which is detectable by the



photoelectric cell and converted into a proportional electric property.

3,867,991

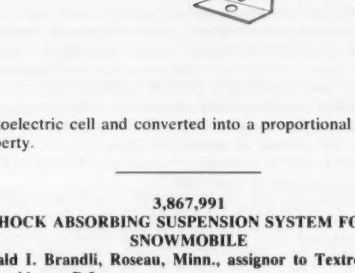
SHOCK ABSORBING SUSPENSION SYSTEM FOR A SNOWMOBILE

Ronald I. Brandli, Roseau, Minn., assignor to Textron Inc., Providence, R.I.

Filed Nov. 19, 1969, Ser. No. 877,943

Int. Cl. B62m *27/00*

U.S. Cl. 180—5 R **8 Claims**



1. A snowmobile having at least one relatively rigid front end supporting ski connected by suspension apparatus to a rotatable steering rod, said suspension apparatus comprising a curved leaf spring having opposite ends connected to said ski,

bracket means secured to a central portion of said leaf spring and connected to said rotatable steering rod for movements of said ski in an essentially horizontal plane to guide the snowmobile and in an essentially vertical plane to compensate for irregularities in the terrain,

a first mount rigidly attached to said ski and a second mount operatively connected to said curved leaf spring and,

shock absorber means, which restricts motion in at least one direction, having one portion pivotally attached to said first mount and another portion pivotally attached to said second mount whereby vertical movement between said leaf spring and said ski is damped.

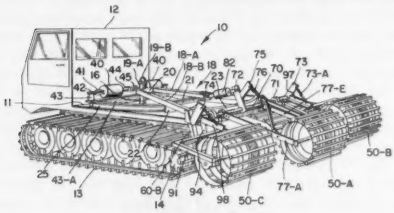
3,867,992
LOAD TRANSFERRING HITCH FOR A VEHICLE

Donald H. Waterman, Poland, Maine, assignor to Valley Engineering, Inc., Gray, Maine

Continuation-in-part of Ser. No. 190,362, Oct. 18, 1971, Pat. No. 3,768,583, which is a division of Ser. No. 859,945, Sept. 22, 1969, Pat. No. 3,652,106. This application Mar. 7, 1973, Ser. No. 338,827

Int. Cl. B62d *53/00*

U.S. Cl. 180—14 B **3 Claims**



1. In apparatus of the character described, a vehicle, a device to be drawn thereby, a frame member for connecting the vehicle and the device to be drawn, said vehicle comprising means for propelling it which includes means for rotation in contact with the surface upon which it is moved and means for driving said propelling means, hollow substantially vertical pivot means attached to said vehicle without universal joints and located substantially at its center of draft, said device to be drawn comprising elongate means rotatable about an axis with its arcuate periphery in contact with the surface upon which it is moved, means for mounting the forward end of said frame member for rotation about the axis of said substantially vertical pivot means, substantially vertical drive means rotatably positioned in said substantially vertical pivot means, means for driving said substantially vertical drive means from said means for driving the vehicle propelling means, power output means connected to the upper end of said substantially vertical drive means and means for rotating the device to be drawn connected to said power output means, said means for rotating the device to be drawn comprising a first drive shaft connected to said power output means and extending longitudinally of the frame member, a second drive shaft extending transversely of the frame member, means for rotating the second drive shaft from the first drive shaft and means for rotating said elongate means from said second drive shaft, said means for rotating said elongate means comprising rod means extending transversely of the vehicle, idler sprocket means rotatably mounted on said rod means and means for driving said elongate means operatively connnected to said idler sprocket means.

3,867,993
COLLAPSIBLE AND MOTORIZED CART

Kozaburo Iizuka, Yokohama, Japan, assignor to J. Osawa & Co., Ltd., Tokyo, Japan

Filed May 24, 1973, Ser. No. 363,572

Claims priority, application Japan, June 5, 1972, 47/65427

Int. Cl. A63b *55/08;* **B62d** *51/04*

U.S. Cl. 180—19 R **5 Claims**

1. A collapsible motorized cart comprising:

a hollow main column;

a handle having one end pivotally coupled to an uppor portion of said main column for movement of said handle to a collapsed position adjacent said main column;

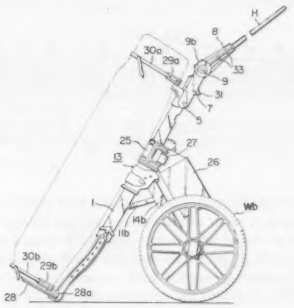
an elongated sliding link positioned within said main column;

a driving link having one end pivotally coupled to an upper end of said sliding link, and another end pivotally coupled to said handle at a location spaced from said one end of said handle;

a pair of cart wheels;

a pair of DC motors, one of said motors coupled to one of said wheels and the other of said motors coupled to the other of said wheels, whereby each of said wheels is driven by an independent motor;

a pair of hollow legs, each having one end pivotally coupled to a corresponding one of said wheels, and another end pivotally coupled to a lower portion of said main column so that both legs extend outwardly from one side of said main column;



a pair of leg links, each positioned within a corresponding one of said hollow legs and having one end pivotally coupled to a corresponding one of said wheels and another end pivotally coupled to said lower portion of said main column;

a pair of supporting arms, each having one end pivotally coupled to a lower end of said sliding link, and another end pivotally coupled to a corresponding leg at a position between the ends of said leg, whereby movement of said handle from an extended position to said collapsed position moves said legs from a spread to a closed position.

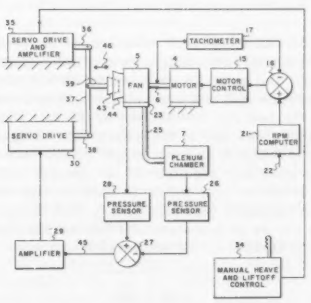
3,867,994
SURFACE EFFECT VEHICLE CONTROL SYSTEM

Joseph E. Zupanick, Richardson, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Sept. 10, 1973, Ser. No. 395,670

Int. Cl. B60v *1/04*

U.S. Cl. 180—118 **14 Claims**



1. A surface effect vehicle control system which comprises: means for blowing air; means connected to the air blowing means for communicating air; means connected to the air communicating means for containing air on the underside of the vehicle; first pressure sensing means in the air containing means; second pressure sensing means in the air blowing means; and means for regulating the amount of air entering

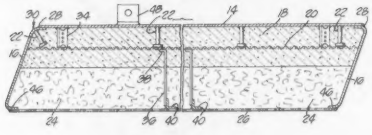
the air blowing means in response to the first and second pressure sensing means.

3,867,995

HIGH DENSITY SOUND TRANSMISSION LOSS SYSTEM

Guy J. Sanders, Rolling Hills Estate, Calif., assignor to Fair Company, El Segundo, Calif.

Filed Mar. 1, 1974, Ser. No. 447,136
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **18 Claims**



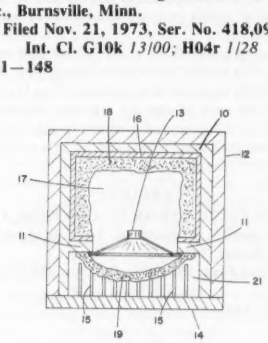
1. A high density sound transmission loss panel comprising a steel housing, a layer of concrete disposed within said housing, a layer of sound absorbing material disposed within said housing inwadly of said concrete, an inner perforated sheet, said sheet extending across said housing and being affixed thereto theeby defining the inner facing od said panel.

3,867,996

SPEAKER ENCLOSURE

Nils Lou, Saint Paul, Minn., assignor to Modular Sound Systems, Inc., Burnsville, Minn.

Filed Nov. 21, 1973, Ser. No. 418,092
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—148 **10 Claims**



1. A high fidelity speaker enclosure for the production of lower frequencies comprising a speaker and a closed housing having first and second compartments therein with support means between said two compartments to hold the speaker between the said two compartments, the first compartment adjoining the back side of the speaker and being sealed and acoustically damped, and the second compartment being in communication with the front of the speaker and having a plurality of narrow slots therein to allow passage of predominently low frequency acoustical energy from the speaker, and including a dome shaped acoustical filtering pad positioned in front of the speaker in said second compartment.

3,867,997

GUARD RAIL SUPPORT FOR SCAFFOLD

Thomas Hyslop, Jr., 414 N. Sycamore, Spokane, Wash. 99202

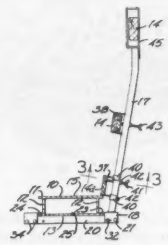
Filed Dec. 26, 1973, Ser. No. 427,833
Int. Cl. E04b *17/14;* **E04g** *1/16*
U.S. Cl. 182—113 **5 Claims**

1. A removable guard rail support for an elongated scaffolding platform having horizontal first and second upwardly facing surface areas adjacent transversely opposed sides and a downwardly facing area spaced elevationally below said first and second upwardly facing surfaces, said guard rail support comprising:

an upright post;

first bracket means fixed to one end of the post for engaging said platform along a portion of the first upwardly facing surface area;

a crossbar having one end thereof mounted to the first bracket means for pivotal movement about a pivot axis to an operative position wherein said crossbar engages the downwardly facing surface;



second bracket means provided at the remaining end of the crossbar for engaging said platform along a portion of the second upwardly facing surface area with said crossbar in said operative position;

locking means interconnecting the first bracket and the crossbar for selectively locking the crossbar in the operative position against relative angular movement about the pivot axis; and

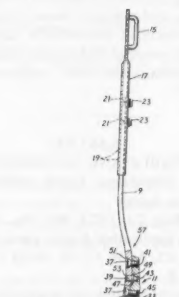
guard rail mounting means on said upright post for releasably receiving and supporting a horizontal guard rail.

3,867,998

REPLACEABLE GAFF CLIMBER

Alexander J. Joseph, Glenview, Ill., assignor to Mathias Klein and Sons, Inc., Chicago, Ill.

Filed Nov. 9, 1973, Ser. No. 414,263
Int. Cl. A63b *27/00*
U.S. Cl. 182—221 **9 Claims**



1. A climber comprising a leg iron formed generally for attachment alongside a portion of a human leg, the portion extending from one side of the calf down and under the instep of the foot to the other side of the foot; a sleeve movably attached to the calf end of the leg iron and adapted for adjust-

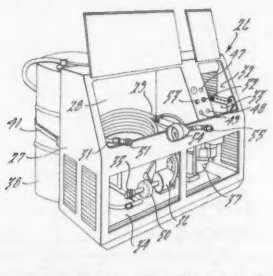
ment to extend the length of said iron; a strap and means for retaining said strap at either end of said leg iron, said strap adapted to encircle and tighten against the portion of the leg adjacent the respective ends of said leg iron; a gaff removably attached to said leg iron in a three point mounting arrangement, said arrangement providing a secure footing and safety for a person using said climber while affording the loss of one of said three mounting points, said gaff being located on a portion of said iron adjacent the position of the foot and disposed so as to point generally downwardly when said climber is attached to the leg, said gaff having a body and a mounting face on one side of said body at the point of attachment conforming to the shape of the complementary portion of said leg iron and three openings in the face, said three openings being aligned and the alignment being longitudinal of the body of said gaff, the walls defining two of said three openings being threaded internally and the walls defining the third opening being smooth; screw means disposed in said two threaded openings and through said leg iron for securely attaching said gaff to said iron; a pin disposed in said third opening of said gaff and extending into said leg iron; and means for retaining said pin in said gaff, said retaining means including a counter-bore adjacent the mounting face in said third opening of said gaff and a shoulder on said pin, the shoulder being disposed in the counter-bore and adjacent the surface of said leg iron so that said pin is captured by the interrelated structures of the shoulder, the walls defining the counter-bore and the adjacent mounting surface of the leg iron when the gaff is mounted to said leg iron.

3,867,999

METHOD AND APPARATUS FOR CHANGING LUBE OIL

Robert G. Cox, Rives Junction, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Mar. 15, 1972, Ser. No. 234,944
Int. Cl. F01m *11/04*
U.S. Cl. 184—1.5 **3 Claims**



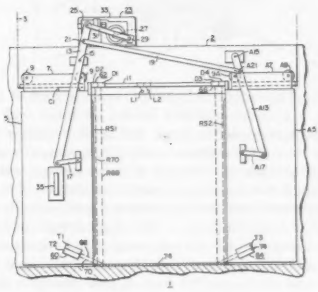
1. In an apparatus for changing the lube oil of an engine having a dipstick and a crankcase oil pan with a bottom drain hole, an assembly comprising an oil change hose having a connector at one end mounted in said drain hole and a self-sealing coupling half at the other end, means securing said other end adjacent said engine, a container for old oil, evacuation hose and pump means comprising an evacuation pump and an evacuation hose, the hose having a self-sealing coupling half connectable to said assembly for drawing off the old oil from said pan to said container, a closed new oil container, dispensing hose and pump means comprising a dispensing pump and a dispensing hose separate from said evacuation hose and pump means, connections between said evacuation and dispensing pumps and said old and new oil containers respectively, said dispensing hose having a self-sealing coupling half connectable to said assembly for delivering new oil from said closed container to said pan, an oil metering device connected to said self-sealing coupling half of the dispensing hose and adapted to shut off oil flow from said dispensing hose when the proper amount of oil has been dispensed, cabinet means adjacent said oil container, prime moved means mounted in said cabinet means and driving said evacuation and dispensing pumps, a starting switch for causing said prime mover means to drive said evacuation pump, a timing switch responsive to activation of said starting switch for maintaining said driving condition between the prime mover means and the evacuation pump for a predetermined time, and a flow switch connected to said evacuation hose and responsive to flow of oil therein to maintain said driving condition after said timing switch has timed out, said flow switch being responsive to lack of old oil in said evacuation hose to terminate said driving condition.

3,868,000

CLOSURE SYSTEM

Richard M. Spear, Jersey City, and Louis M. Capuano, Westfield, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 425,920
Int. Cl. B66b *13/26*
U.S. Cl. 187—52 **3 Claims**



1. An elevator system, comprising:
a structure having a hoistway, and a landing having an opening to the hoistway,
an elevator car mounted for movement in the hoistway of said structure to serve said landing,
said elevator car having an opening therein which is in registry with the opening to the hoistway when said elevator car is at said landing,
a car door mounted for movement to open and close the opening of said elevator car,
a hoistway door mounted for movement with said car door to open and close the opening of the hoistway,
first object detector means including transmitter means providing at least one beam of radiant energy, and detector means responsive to such energy,
a sill at the landing adjacent the opening to the landing, said sill having a non-specular surface,
said transmitter means being mounted on the car door for movement therewith and positioned to direct a beam of radiant energy at said non-specular surface of the sill,
said detector means being mounted on said car door for movement therewith and aimed to intersect the beam of radiant energy at said sill,
said detector means being responsive to an interruption of the reflected radiant energy from said sill for controlling the operation of the car and hoistway doors,
and second object detector means including a source of electrical potential, translating means, and ribbon switch means, said ribbon switch means being mounted on an edge of at least one of said doors, which is the leading edge upon closure thereof, said translating means being energized by said source of electrical potential via said ribbon switch means until an object actuates the ribbon switch means, which deenergizes said translating means, said translating means being connected to control the

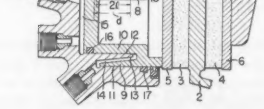
operation of said car and hoistway doors when it is in its deenergized condition.

3,868,001

WHEEL CYLINDER IN A HYDRAULIC BRAKE SYSTEM OF A VEHICLE

Masatada Yokoi, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi and Aichi-ken, both of Japan

Filed Dec. 8, 1970, Ser. No. 96,166
Claims priority, application Japan, Dec. 12, 1969, 44-00464
Int. Cl. B60t *11/10*
U.S. Cl. 188—345 **6 Claims**



1. A wheel cylinder in a hydraulic brake system of a vehicle, including a cylinder member having an inner wall and, an annular portion to define large and small diameter bores, at least one movable member slidably mounted within said bores, said at least one movable member being provided with a ring-shaped part having an outer wall slidably fitted in said larger diameter bore and a cylindrical part slidably fitted in said smaller diameter bore, a ring-shaped hydraulic pressure chamber being defined between said annular portion of said cylinder member and said ring-shaped part of said movable member and connected to one of dual master cylinders, a cylindrical hydraulic pressure chamber being defined between said cylindrical part of said movable member and said annular portion of said cylinder member and connected to the other of said dual master cylinders, a first sealing member disposed between said annular portion of said cylinder member and said cylindrical part of said movable member, and a second sealing member disposed between the inner wall of said cylinder member defining said large diameter bore and the outer wall of said ring-shaped part of said movable member, said annular portion of said cylinder member and said ring-shaped part of said movable member constituting said ring-shaped hydraulic pressure chamber being shaped and arranged so as to be mutually entered from one to the other of said annular portion and said ring-shaped part, said hydraulic pressure chambers enveloping the total cross-sectional area of the bores.

3,868,002

BRAKE MEMBERS AND SHOES AND SHOE SUPPORTS FOR SUCH MEMBERS, ESPECIALLY FOR TWO-WHEELED VEHICLES

Raymond Babled, 72 Avenue d'Orgeval, 95 Saint-Gratien, France

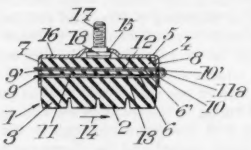
Filed Oct. 1, 1973, Ser. No. 402,309
Claims priority, application France, Oct. 3, 1972, 72.34987
Int. Cl. F16d *69/04*
U.S. Cl. 188—73.1 **7 Claims**

1. A brake member for a bicycle, said member comprising: a shoe support rigidly fixed to brake actuating means, said support having at least two lateral surfaces which are facing each other,

a brake shoe comprising a head adapted to be introduced into said support so as to be immobilized therein, the active surface of the brake shoe being adapted to be applied against the rim of the wheel equipped with said brake member,

a generally U-shaped pin comprising two arms,

each lateral surface of the support comprising two openings bounded by a complete perimeter, the area of each opening being only slightly greater than the cross section of each arm of the pin,



the head of said shoe including two through-openings which face the corresponding openings of the lateral surfaces for receiving the arms of the pin,

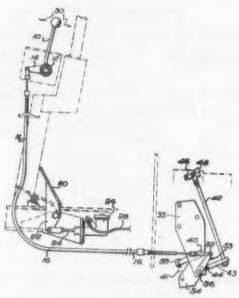
the length of each arm of the pin being greater than the distance separating the two lateral surfaces and said pin being arranged so that its arms have a tendency to separate from one another when said arms are introduced into the corresponding openings of the head of the shoe.

3,868,003

BRAKE ACTUATED RETURN TO NEUTRAL MECHANISM

Kenneth Smith, Batley, England, assignor to Joshua Shaw & Sons Limited, Batley, England

Filed May 9, 1973, Ser. No. 358,683
Claims priority, application Great Britain, Feb. 23, 1973, 8925/73
Int. Cl. G05g *11/00;* **B60k** *29/02*
U.S. Cl. 192—4 B **2 Claims**



1. In a wheeled vehicle of the type having

a. a pedal for applying brakes to the vehicle;

b. a hydrostatic transmission employing a variable swash plate pump whose swash plate is selectively positionable to a forward driving inclination, a neutral position where the pump has no output, and a reverse drive inclination;

c. a pivot lever for moving the swash plate to the selected position;

d. a manually operated handle for placing the swash plate in a selected position; and

e. means for causing the swash plate to move to the neutral position when the pedal is activated to apply the brakes, the improvement wherein activation of the pedal causes the swash plate to be brought to its neutral position without altering the position of the manually operated handle, the improvement comprising:

1. a first assembly mounted to pivot about a stationary first axis;

2. a second assembly having a crank mounted to pivot on the first assembly about a second axis spaced from and parallel to the first axis, the second assembly having means responsive to activation of the brake pedal for causing the crank to pivot relative to the first assembly about the second axis;
3. means connecting the manually operated handle to the first assembly whereby movement of the handle causes movement of the first and second assemblies as a unit about the first axis;
4. a link pivotally connected to the crank at a third axis parallel to and spaced from the second axis, the link being pivotally connected to the pivot lever at a fourth axis parallel to and spaced from the third axis; and
5. the third axis and the first axis being spaced equidistantly from the second axis whereby activation of the brake pedal causes the crank to pivot and bring the third axis into alignment with the first axis without altering the position of the manually operated handle.

3,868,004

SYNCHRONOUS SELF-SHIFTING CLUTCH

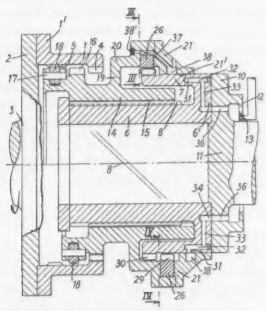
Herbert Arthur Clements, Weybridge, and Robert Howard Heybourne, Molesey, both of England, assignors to S.S.S. Patents Limited, London, England

Filed Oct. 29, 1973, Ser. No. 410,453

Claims priority, application Great Britain, Oct. 31, 1972, 50203/72

Int. Cl. F16d *23/02*

U.S. Cl. 192—67 A **5 Claims**



1. A synchronous self-shifting toothed clutch comprising first and second rotary clutch parts, coacting clutch teeth with clutch actuating mechanism operative upon passage of said first and second rotary clutch parts through synchronism in one direction of relative rotation, the said mechanism including an intermediate member constrained for movement relative to one of said first and second rotary clutch parts to effect at least partial interengagement of the coacting clutch teeth, the clutch including means operable to prevent disengagement of the clutch teeth when interengaged, characterised in that the said means comprise locking means carried by the intermediate member or by the said one rotary clutch part and baulking means carried by the said one rotary clutch part or by the intermediate member, with means mounting said locking means and said baulking means whereby said locking means and said baulking means are capable, when the coacting clutch teeth are at least partially interengaged, of relative rotational movement about the clutch axis between a baulking condition in which disengagement of the clutch teeth is prevented owing to the said baulking means being in axial baulking relationship with said locking means and a non-baulking condition in which disengagement of the clutch teeth is permitted owing to the said baulking means being out of axial baulking relationship with said locking means.

3,868,005

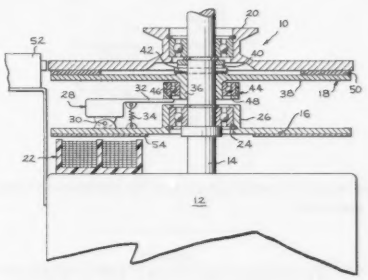
FRICTION CLUTCH WITH CENTRIFUGAL AND MAGNETIC SPEED CONTROL

Stephen L. McMillan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 14, 1973, Ser. No. 341,029

Int. Cl. F16d *43/06*

U.S. Cl. 192—105 CS **3 Claims**



1. An electro-mechanical clutch mechanism comprising:
an electric motor having a rotatable shaft;
a carrier plate mounted in a fixed axial location around said shaft for rotation relative thereto;
an output member mounted around said shaft for rotation relative thereto;
an input member mounted for rotation with said shaft and arranged for movement axially on said shaft for engagement with said output member;
centrifugal responsive means mounted on said carrier plate to axially move one of said members relative to the other of said member as said carrier plate accelerates to motor speed;
electromagnetic coil means spaced from said carrier plate to form an air gap so that said electromagnetic coil induces an eddy current in said carrier plate, for altering the speed at which said carrier plate rotates relative to said shaft and thereby controlling the movement of the centrifugal responsive means and the resultant clutch torque between said input and output members.

3,868,006

SELF-ADJUSTING RELEASE MECHANISM FOR FRICTION CLUTCHES

Donald F. Linn, Manlius, and George L. Wishart, Syracuse, both of N.Y., assignors to Lipe-Rollway Corporation, Syracuse, N.Y.

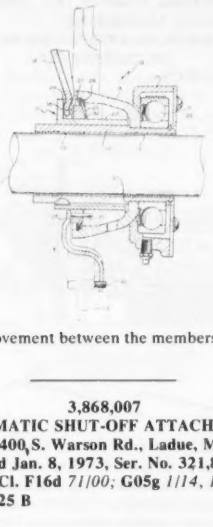
Filed May 3, 1973, Ser. No. 356,723

Int. Cl. F16d *11/02, 13/75*

U.S. Cl. 192—111 A **6 Claims**

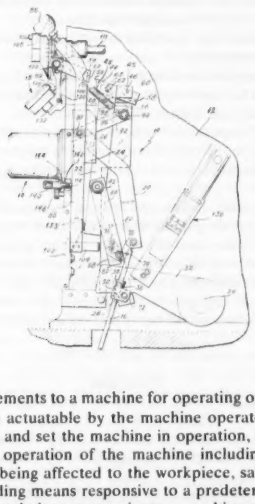
1. In a friction clutch for connecting driving and driven shafts, the clutch having means for normally effecting a driving connection between the shafts and release levers actuatable to disengage said driving connection, the improvement comprising a first sleeve member axially slidable on the driven shaft, a second sleeve member axially slidable on the first sleeve member, means on the second sleeve member engageable with the release levers for actuating same, releasable means normally connecting the first and second sleeve members together to prevent relative axial movement therebetween whereby axial movement of the first sleeve member in one direction operates to correspondingly move the second sleeve member and actuate the release levers, and independent means located adjacent the releasable sleeve connecting

means and operable when the driving connection wears to release the sleeve member connecting means and permit



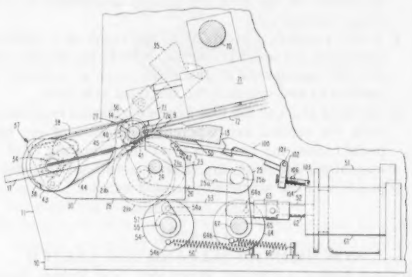
relative axial movement between the members to compensate for the wear.

3,868,007
AUTOMATIC SHUT-OFF ATTACHMENT
Joseph Sunnen, 400 S. Warson Rd., Ladue, Mo. 63124
Filed Jan. 8, 1973, Ser. No. 321,869
Int. Cl. F16d *71/00*; **G05g** *1/14*, *1/04*
U.S. Cl. 192—125 B **5 Claims**



1. Improvements to a machine for operating on workpieces, pedal means actuatable by the machine operator to activate the machine and set the machine in operation, and means to monitor the operation of the machine including monitoring the changes being affected to the workpiece, said monitoring means including means responsive to a predetermined condition of the workpiece to terminate a machine operation, the improvements comprising latching means under control of the pedal means, said latching means including means movable to a latched condition when the pedal means are actuated to maintain the operating condition of the machine independently of the pedal means, and other means operable to delatch the latching means when the predetermined condition is sensed by the monitor means, said last named means including a first member operatively connected to the monitoring means and a second member engageable with the first member when the latching means are in their latched condition, said first member moving relative to the second member during a machine operation under control of the monitoring means, said first and second members becoming disengaged from each other when the monitoring means sense the predetermined condition of the workpiece.

3,868,008
PRINTING STATION APPARATUS FOR A BANK PASSBOOK TYPE DOCUMENT
Philip A. Brumbaugh, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 13, 1973, Ser. No. 369,623
Int. Cl. B41j *13/00*
U.S. Cl. 197—127 R **6 Claims**



1. A print station apparatus for feeding and printing on a passbook type document comprising, in combination:

a. a main frame including a base plate and at least a pair of side frames,

b. a rotatable document drive rod mounted between the side frames,

c. a rotatable platen of resilient deformable material having a plurality of annular grooves and rings alternately disposed axially thereof, said annular grooves each having a cross-section so dimensioned and configurated as to provide a lateral expansion area for respectively adjoining annular ring portions, whereby each of said annular ring portions may undergo resilient lateral expansion to accommodate document thickness variations,

d. pivotal means within said side frames for supporting the platen and wherein the platen is normally positioned in spaced apart parallel relationship to the document drive rod,

e. means for incrementally driving the document drive rod and platen in movable relation,

f. a wedge-shaped bar mounted in fixed relationship to the document drive rod and which functions to assist in visually aligning the printing line of a document,

g. a first means coupled with said pivotal means and operable to move the platen toward the document drive rod for engaging and feeding a document inserted therebetween to a predetermined position, and

h. a second means coupled with said pivotal means and operable to move the platen to a printing position.

3,868,009
TRANSFERRING DEVICE
Agostino Billi, and Angelo Palmieri, both of Bologna, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy
Filed Mar. 29, 1973, Ser. No. 345,974
Int. Cl. B65g *47/32*
U.S. Cl. 198—25 **8 Claims**

1. Apparatus for feeding workpieces, comprising

a. a supply conveyor to which workpieces are delivered at random;

b. a discharge conveyor arranged to receive workpieces and to move them in predetermined spaced relation;

c. a turntable conveyor located a predetermined distance above said supply and discharge conveyors;

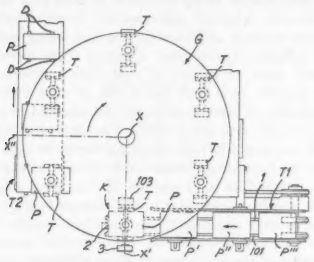
d. means for rotating said turntable conveyor in synchronism with the movement of the discharge conveyor;

e. a stop movable into and out of the path of a workpiece at the output end of the supply conveyor;

f. a plurality of tong-like workpiece grippers mounted beneath the turntable conveyor and equidistantly spaced around a pitch circle common thereto, each said tong-like gripper being arranged to be raised and lowered relatively to the turntable conveyor;

g. control means operable to lower a gripper and to cause it to grip a workpiece arrested by said stop and to raise the gripper workpiece for movement by the turntable conveyor into position over the discharge conveyor, to lower the gripper and to deposit the workpiece gripped thereby onto the discharge conveyor, to release the gripper from the workpiece, and to raise the released gripper;

h. means operable to effect rotation of a gripper relative to the turntable conveyor at least during movement of said gripper from the workpiece gripping position thereof relative to the supply conveyor to a position at which it is lowered relative to the discharge conveyor to deposit a workpiece thereon, the said means comprising a planet



gear coaxial with each gripper and rotatable therewith, a stationary sun gear coaxial with the axis of rotation of the turntable conveyor, said planet gear being rotatable through the intermediary of said stationary sun gear;

i. each said gripper comprising a vertical tubular gripper body which is mounted for longitudinal sliding movement in the turntable conveyor, is operatively connected to said control means, and at its lower end has two gripper jaws pivotally mounted thereon for movement towards and away from one another; and

j. an operating rod extending through said tubular gripper body for opening and closing said gripper jaws, said operating rod being slidable lengthwise of the gripper body, the lower end of the operating rod being formed as a double-sided rack which meshes with two opposite toothed segments one each of which is connected to a gripper jaw, and the upper end of the operating rod projecting out of the gripper body and being operatively connected to said control means.

3,868,010

HANDLING APPARATUS FOR A HOLLOW GLASS ARTICLE

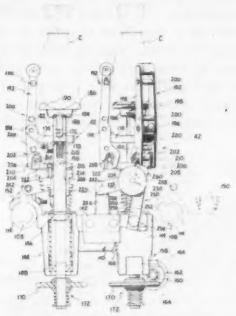
John D. Banyas, Toledo, and Edward A. Ross, Waterville, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 77,425, Oct. 2, 1970, Pat. No. 3,726,559. This application Aug. 30, 1972, Ser. No. 284,700

Int. Cl. B65g *15/00*

U.S. Cl. 198—179 **7 Claims**

1. Container handling apparatus comprising a frame, horizontally extending upper and lower track means mounted on said frame in vertical alignment with each other, first curved track means mounted on said frame to connect one end of said upper track means to one end of said lower track means, second curved track means mounted on said frame connecting the respective other ends of said upper and lower track means to each other, an endless conveyor chain having a plurality of uniformly spaced transversely extending link pin means, roller means on said link pin means engaged with said track means to support and guide said chain along an endless path established by the interconnected track means, drive means for driving said chain in movement along said endless path, a plurality of container chuck assemblies mounted in uniformly spaced relationship upon said link pin means for movement



with said chain along said endless path, and means for minimizing the centripetal acceleration imparted to said chuck assemblies as the chuck assemblies move to and from said curved track means.

3,868,011

LINK CONVEYOR

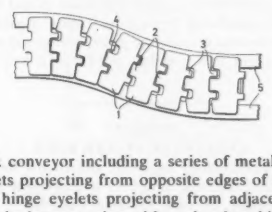
Wolfgang Janzen, Wilnsdorf-Obersdorf, and Alfred Bald, Eiserfeld, both of Germany, assignors to Amsted-Siemag Kette GmbH, Betzdorf/Sieg, Germany

Filed June 5, 1973, Ser. No. 367,221

Claims priority, application Germany, July 31, 1972, 2237600

Int. Cl. B65g *17/06*

U.S. Cl. 198—195 **9 Claims**



1. A link conveyor including a series of metal plate links, hinge eyelets projecting from opposite edges of each of said links, said hinge eyelets projecting from adjacent edges of adjacent links interengaging with each other, hinge pins extending through said interengaging hinge eyelets to hinge adjacent plate links to each other, a guide member formed integrally with each of said plate links, said guide members comprising flanges projecting substantially at right angles from the underside of said link, webs extending parallel to the underside of each of said plate links, said webs joining said flanges integrally to said hinge eyelets projecting from one of said opposite edges of said link, each of said plate links and guide members being formed of sheet metal, and said guide member being operative to guide said links along guide rails.

3,868,012

CONTAINER ORIENTING APPARATUS

Lewis H. Kinsley, New Britain, Pa., assignor to Kinsley Corporation, Trevose, Pa.

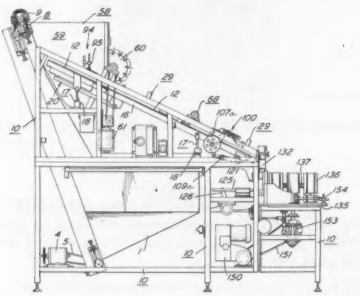
Filed Mar. 30, 1973, Ser. No. 346,674

Int. Cl. B65g *47/24*

U.S. Cl. 198—276 **17 Claims**

1. A machine for arranging randomly oriented containers of elongated shape having an open end and closed end compris-

ing, a storage bin for holding a plurality of said containers in random orientation, an inclined chute having an entrance end and a discharge end, dividers located above said chute for defining a plurality of channels, conveyor means for transporting containers from said bin to the entrance end of said chute, said containers falling into said channels and moving by gravity from said entrance end toward said discharge end, drum means rotatable in a direction counter to the direction of movement of said containers along said chute for permitting said containers to pass only when arranged in end-to-end relationship in said channels with either their closed ends or open ends forward, escapement means for releasing groups of said containers equal to the number of said channels at preselected intervals, closed-end-forward orienting means for operating on said groups to insure forward movement of each container down the chute only with its closed end forward, reciprocating means located adjacent said discharge end of said chute for pushing each group of containers forwardly in unison at preselected intervals, collection means including U-shaped receiving pockets and means for continuously moving said pockets in front of said reciprocating means with the open ends of said U-shaped pockets facing said reciprocating means, and means for timing the operation of said escapement means, said closed-end-forward orienting means and said reciprocating means in order to push each group of said containers in unison into unfilled pockets on said collection means.



3,868,013

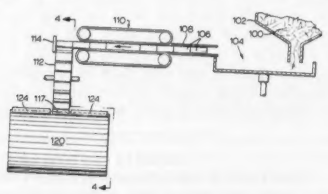
CIGARETTE FILTER FEED

Warren A. Brackmann, Cooksville, and Daniel Dicianni, Toronto, Ontario, Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada

Division of Ser. No. 201,411, Nov. 23, 1971, Pat. No. 3,743,075. This application Apr. 9, 1973, Ser. No. 348,884

Int. Cl. B65g *47/24*

U.S. Cl. 198—287 **2 Claims**



1. A cigarette filter applying apparatus including feed means for feeding to a first station a stream of cigarette filter elements having a length approximately twice that ultimately required, and means for feeding individual elements of said stream from said first station to a filter applying station, said feed means comprising a hopper to receive and store a plurality of cigarette filter elements, a shallow bowl of substantially circular cross-section in feed communication with said hopper whereby filter elements may be fed from said hopper to said bowl, said bowl being mounted for rotation about a substantially vertical axis and consisting of a right cylindrical wall having an inner periphery and a bottom closure located in a substantially horizontal plane, said bottom closure having a groove of part-circular cross section of diameter substantially that of the filter elements, said groove being formed therein adjacent said wall for receiving filter elements therein, said bowl further including a circular cover means spaced from said bottom closure a distance at least the diameter of said filter elements, said cover means having an opening to feed filter elements from said hopper to said bowl, said cover means having an outer periphery spaced from the inner periphery of said right cylindrical wall and curved downwardly towards said groove, the degree of curvature of said periphery of said cover means being sufficient to cam into said groove filter elements oriented substantially longitudinally of the groove and located adjacent thereto and being sufficient to prevent radially aligned filter element from movement towards said inner periphery of said right cylindrical wall a distance greater than half the width of said groove, drive means drivably engaging said bowl and adapted to rotate said bowl about said vertical axis above a predetermined minimum speed of rotation whereby filter elements in said bowl are subjected to centrifugal forces and form a stream of filter elements located in said groove in frictional engagement therewith, the filter elements in said stream being in substantially end-to-end alignment, and conduit means extending from said first station to said bowl and located in said bowl in the path of said stream, whereby filter elements are removed from said stream by the action of said centrifugal forces and passed as a stream to said first station.

3,868,014

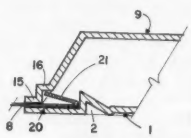
CARTON DOUBLE-WALL BASE AND CONTAINER UTILIZING SAME

John W. Clarke, Indianapolis, Ind., assignor to Eli Lilly and, Company, Indianapolis, Ind.

Filed Oct. 16, 1973, Ser. No. 406,999

Int. Cl. B65d *5/50, 45/00*

U.S. Cl. 206—45.19 **16 Claims**



1. A carton double-wall base adapted for cooperative engagement with a carton cover comprising:

1. An independently formed top wall having one or a plurality of integrally formed raised lands along a segment of the edge on one or on each of two opposing sides, and an integrally formed locking notch laterally coextensive with and positioned inboard from each land, said locking notch comprising a groove in the inside surface of said top wall immediately adjacent to said land;
2. An independently formed bottom wall having integrally formed therein, and disposed to cooperate with said locking notches in said top wall, internal ribs equal in number to the number of said locking notches in said top wall, said internal ribs positioned inboard from the edge of said bottom wall and rising upwardly from the inside surface of said bottom wall with the outboard side of such ribs essentially parallel to said edge and making essentially a right angle with said surface; said top and bottom

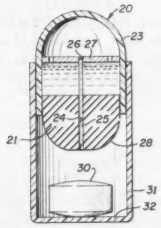
walls being vertically aligned in a position wherein each locking notch in said top wall is in longitudinal alignment with an internal rib in said bottom wall, and an entrance passage defined between the inside surface of each raised land in said top wall and the inside surface of said bottom wall, said entrance passage being in longitudinal alignment with said locking notch and said internal rib; and

3. said so-aligned top and bottom walls being sealed together around the perimeter edge, exclusive of the segment of said edge whereat there is an entrance passage, forming said base.

3,868,015
INSECT BITE KIT

Larry G. Thompson, 524 Fifth St., Traverse City, Mich. 49684

Filed Sept. 14, 1973, Ser. No. 397,322
Int. Cl. B65d *85/54*; **A61l** *5/32*
U.S. Cl. 206—229 **5 Claims**



1. An intra-dermal injection assembly comprising

an imperforate housing member having a perforate partition therein and an open end,

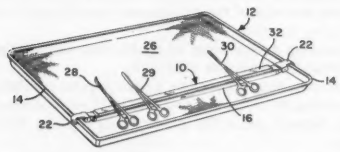
a plunger slidably and sealably mounted in said open end and having a hole therethrough,

a hollow injection needle secured at one end over an opening through said partition and sealably and slidably extending into said hole.

3,868,016
MAGNETIZED SURGICAL INSTRUMENT TRAY RESTRAINT

Roman Szpur, and Robert K. Finley, Jr., both of Dayton, Ohio, assignors to Medicotech Company, Dayton, Ohio

Filed Mar. 5, 1973, Ser. No. 337,836
Int. Cl. B65d *1/34*
U.S. Cl. 206—350 **7 Claims**



1. A magnetized surgical instrument tray restraint comprising:

a U-shaped channel,

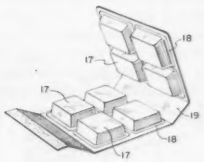
a flexible magnetized bar retained within said channel, said bar having sufficient magnetic force to securely yet releasably hold metallic surgical instruments onto said bar, and

tension clamps extensibly joined to each end of said U-shaped channel by rubber connectors and adapted to fit over the edges of an instrument tray so as to hold the magnetized restraint in place on said tray.

3,868,017
FOOD CONTAINER

Peter C. Carveth, Chicago, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,985
Int. Cl. B65d *73/00*
U.S. Cl. 206—491 **1 Claim**

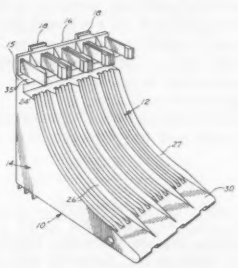


1. A container for packaging food products or the like, said container comprising a rigid wrap-around support with a plurality of semi-rigid bowls hermetically sealed thereto with the wrap-around support enclosing the bowls to force the bottom of one to press upon the bottom of another for support thereof, the wrap-around support being sealed upon itself to provide a protective support around the bowls, and the wrap-around support having weakened lines between the bowls to provide separation of the bowls into individual units with access thereto.

3,868,018
TAPE REEL CARTRIDGE STORAGE CELL

Joel O. Thies, Boulder, Colo., assignor to Xytex Corporation, Boulder, Colo.

Filed Oct. 27, 1972, Ser. No. 301,434
Int. Cl. A47b *81/06*; **A65h** *75/00*
U.S. Cl. 211—40 **12 Claims**



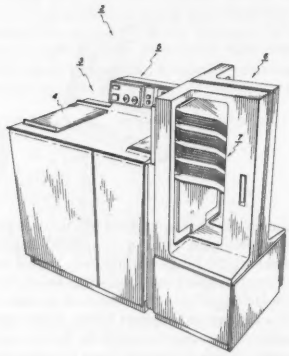
1. A reel storage cell adapted for releasable retention of a plurality of tape reel cartridges and the like wherein each cartridge is characterized by having an outer, generally circular peripheral edge portion, said storage cell comprising:

a body portion having a plurality of forwardly directed, arcuate grooves curving downwardly and forwardly in closely-spaced parallel relation to one another over an arc of substantially 90°, the curvature of each groove conforming to that of the outer peripheral edge of the cartridge, and a downwardly and forwardly divergent guide surface at the front, lower end of each groove; and latching fingers disposed adjacent to the upper rearwardmost point on opposite sides of each groove and extending forwardly for a limited distance, said fingers being possessed of limited resiliency and the spacing between each set of fingers on opposite sides of a groove normally being slightly less than the width of the groove so that each set of fingers will spread when a cartridge is pressed edgewise therebetween whereby to yieldingly engage the cartridge and releasably retain same in an associated groove.

3,868,019
TRAY APPARATUS

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1972, Ser. No. 319,839
Int. Cl. B65h *31/24*
U.S. Cl. 211—126 **2 Claims**

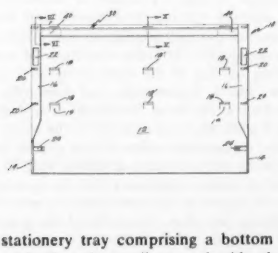


1. Tray apparatus comprising
a frame
an array of closely spaced tray members supported by said frame in vertical alignment,
each of said tray members having a first wall portion extending in a direction inclined to the horizontal plane, and a second wall portion extending in a direction inclined to the vertical plane from said first wall portion at right angles thereto, said wall portions in vertical alignment defining a nested relationship,
wherein each of said tray members includes a third wall portion extending in the horizontal plane,
wherein each of said tray members has mounting means connected thereto, said mounting means including a resilient member to enable movement of said tray members relative to said frame,
wherein said mounting means includes cam follower means which guide said tray members in a generally vertical path.

3,868,020
STATIONERY TRAY

Roger C. Bruins, Jenison Township, Ottawa County, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 12, 1973, Ser. No. 406,006
Int. Cl. A47f *3/14;* **B65d** *1/24*
U.S. Cl. 211—126 **8 Claims**

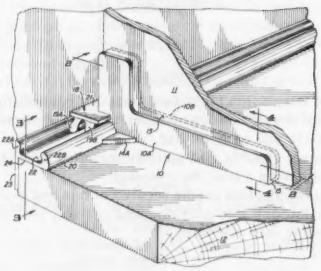


1. In a stationery tray comprising a bottom wall and an upwardly projecting side wall at each side thereof, and a movable paperstop for said tray, said movable paperstop including releasable securing means for cooperating with said tray whereby said paperstop can be positioned in said tray at various positions along the length thereof, thereby making it possible to adjust the depth of said tray, the improvement comprising: said paperstop being defined by an elongated wall member, said wall member having a cross section generally in the shape of a 7, the base leg of the 7 forming a back wall for said paper tray and the top thereof forming a flange; said wall member including a cutaway portion at each end thereof between said base leg and said flange to thereby form resilient fingers at the ends of said flange; said releasable securing means being formed on each said resilient finger at each end of said paperstop; said tray including a pair of lips extending inwardly from said side walls thereof, said securing means on said resilient finger cooperating with said lips to thereby hold said paperstop in place; said resilient fingers resiliently biasing said securing means upwardly into engagement with said lips from the underside of said lips to thereby secure said paperstop in said tray.

3,868,021
SEPARATOR PANEL HOLDER FOR DISPLAY SHELVES

Wilhelm Heinrich, D-3441, Oberhone, Germany

Filed Oct. 9, 1973, Ser. No. 404,249
Int. Cl. E05d *13/02*
U.S. Cl. 211—184 **7 Claims**



1. A clamping means for detachably mounting and holding partition panels on a shelf comprising:
an L-shaped clamping member grooved along its length to provide a pair of parallelly arranged spaced legs for receiving therebetween a partition panel,
a clamping means arranged at the outside peripheral corner of the intersection of the legs for detachably fitting into a clamping strip, and
a clamping strip comprising an elongated channel for positioning laterally of the longitudinal axis of said L-shaped clamping member,
said clamping means being insertable into said channel for detachable connection therewith,
said clamping strip comprising a right angular configuration presenting its channel along the outer surface along one edge thereof and a flat planar surface along the other edge,
said right angular configuration fitting over the top edge of the shelf being partitioned.

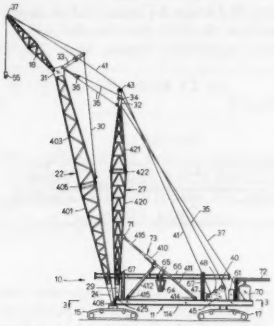
3,868,022
SELF-PROPELLED HEAVY DUTY MOBILE CRANE

Roy Greenlay, Greenfield, and George S. Allin, Jr., Brookfield, both of Wis., assignors to Harnischfeger Corporation, Milwaukee, Wis.

Filed Nov. 23, 1973, Ser. No. 418,679
Int. Cl. B66c *23/36*
U.S. Cl. 212—8 R **11 Claims**

1. A self-propelled mobile crane comprising: a substantially triangular support frame having one end wider than an oppo-

site end; spaced apart drivable and steerable first bogie means connected at spaced apart bogie connection points near said one end of said support frame; second drivable and steerable second bogie means connected near an opposite end of said support frame; driving means and steering means for said first and second bogie means; a vertically swingable room having a pair of spaced apart lower ends mounted for vertical swinging movement on said support frame, each boom end being



pivotally attached to said support frame at a boom attachment point adjacent one of said bogie connection points; and a boom support mast having a pair of spaced apart lower ends mounted for vertical swinging movement on said support frame, each mast end being attached to said support frame at a mast attachment point adjacent one of said bogie connection points, said boom and mast attachment points being located substantially directly above said connection points of said frist bogies.

3,868,023

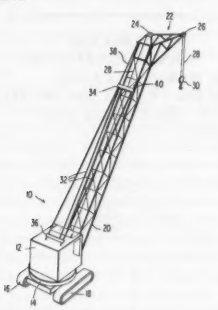
CRANE WITH BOOM ATTACHMENT

John H. Willingham, 1280 Estate Dr., Memphis, Tenn.

Continuation of Ser. No. 264,523, June 20, 1972, , which is a continuation of Ser. No. 29,517, April 17, 1970,. This application Mar. 13, 1973, Ser. No. 340,813

Int. Cl. B66c *23/66*

U.S. Cl. 212—46 R **6 Claims**



1. A hoisting crane for handling wide loads comprising a movable undercarriage, a control cab mounted on said undercarriage, a crane boom pivoted at its lower end to said undercarriage and extending upwardly and outwardly from said cab, the upper end of said boom having a substantially rectangular cross section, a bridle, gantry cables coupled to said cab and said bridle for raising and lowering said boom, an attachment for said boom comprising a framework including a boom connecting section, a laterally extending section, and a crown section surmounting and substantially laterally coextensive with said boom connecting and laterally extending sections, said boom connecting section having a substantially rectangular end, means for securing the rectangular ends of said boom and said connecting section one to the other such that said connecting section forms an axial extension of said boom, a first hoist cable sheave mounted on the end of said laterally extending section remote from said boom connecting section, a second hoist cable sheave on said crown on the side of the boom axis remote from said first sheave, said second sheave constituting the highest point of said crane, the distance between the boom end and said second sheave extending along a line parallel to the boom axis being less than the generally horizontal distance between said first sheave and the boom axis at the boom end, a transverse support mounted at the upper end of said connection section, a pair of stabilizing cables, and means securing said stabilizing cables to the opposite ends of said transverse support and to said bridle.

3,868,024

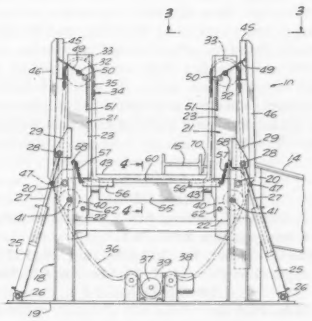
APPARATUS FOR MOVING AND ROTATING LONG WORKPIECES SUCH AS STRUCTURAL STEEL

Jack C. Lee, 940 Orange Grove Ave., Arcadia, Calif. 91006

Filed Feb. 22, 1974, Ser. No. 444,717

Int. Cl. B65g *47/32*

U.S. Cl. 214—1 QC **24 Claims**

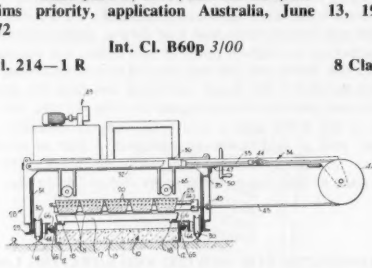


12. Apparatus for rotating and moving a long workpiece relative to a work station comprising in combination a long power driven conveyor having a workpiece work station thereadjacent, a plurality of workpiece handling and rotating means astride said conveyor at spaced apart points therealong each comprising: a pair of elongated bracket means having the lower end portion of one bracket means pivoted to one side of said conveyor and the end portion of the other pivoted to the other side of the conveyor, slider means reciprocable along each bracket and supporting idler sprocket means at the outer end thereof, motor means operable to shift each slider means lengthwise of the associated bracket means and operable in the retracted position of said slider means to pivot said associated bracket and slider means to different positions including a generally upright position and a generally horizontal position laterally of the side of said conveyor, loop belt means having the upper run thereof trained over said idler sprocket means and beneath the workpiece support surface of said conveyor, reversible drive means operatively connected to said loop belt means to drive said belt in either direction, and said pair of workpiece handling and rotating means being selectively operable in unison with one another to lift a workpiece off said conveyor and to rotate the workpiece about the longitudinal axis thereof and to shift the same laterally of said conveyor at the option of the operator.

3,868,025
CONCRETE MOULD POSITIONER

Robert Lyndon Bratchell, Seacliff, Australia, assignor to Concrete Industries (Monier) Limited, Seacliff, Australia

Filed June 5, 1973, Ser. No. 367,128
Claims priority, application Australia, June 13, 1972, 9300/72
Int. Cl. B60p *3/00*
U.S. Cl. 214—1 R **8 Claims**

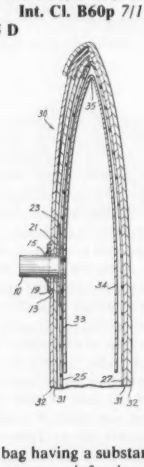


1. A positioner for positioning a series of aligned moulds used for the moulding of prestressed concrete ties on a base which has a moulding bed and a pair of rails positioned one on each side of the bed, comprising a vehicle having a frame, rail engaging wheels engageable on said rails and supporting the frame, locking means on the frame engageable with co-operating locking means on the base to lock said vehicle against movement along the rails, a pressure actuated mould positioning cylinder carried by the frame, and mould engaging means on the piston rod of said mould positioning cylinder, so constructed and arranged that, when said piston rod is engaged with a mould of said series, the vehicle is locked against said movement, and fluid at pressure is introduced into said cylinder, operation of said cylinder effects movement of said series over the base.

3,868,026
DUNNAGE BAG

Robert O. Baxter, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 264,410, June 20, 1972,. This application Dec. 14, 1973, Ser. No. 424,796
Int. Cl. B60p *7/14*
U.S. Cl. 214—10.5 D **13 Claims**

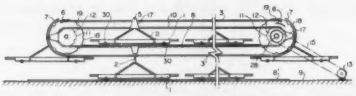


13. In a dunnage bag having a substantially air tight bladder encased within at least one reinforcing sheet and including an inflating valve operatively mounted in one wall of said bag, the improvement which comprises a sheet of flexible material disposed within said bladder between said valve and the wall of said bladder opposite thereto, said sheet of flexible material being secured to said bladder so as to flutter while said bag is being inflated through said valve whereby the fluttering of said sheet of flexible material dissipates the energy of the inflating air stream and thereby protects said bladder from the destructive force of an inflating air stream.

3,868,027
AUTOMOTIVE VEHICLE STORING APPARATUS FOR PARKING

Takashi Matsurra, 28-4 Izumi 2-Chome, Tokyo, Japan

Filed Mar. 5, 1974, Ser. No. 448,433
Claims priority, application Japan, Mar. 24, 1973, 48-33866
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 B **4 Claims**

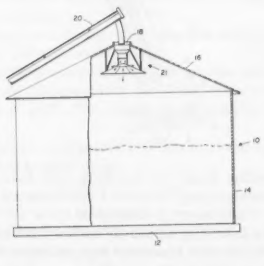


1. An automotive vehicle storing apparatus for parking comprising two pairs of upper and lower parallel horizontal rails, two pairs of driving wheels arranged at end portions of and between the upper and lower rails, two endless chains mounted on the pairs of driving wheels, rollers with a shaft thereon; and a plurality of pallets travelling on said rails by means of said rollers, each of the pallets hanging rotatably from the shaft of the roller, characterized in that it comprises two pairs of wheels each fixed to each of the driving wheels and having a larger diameter than that of the driving wheel, and a plurality of link bodies each linking one side rail and endless chain and belonging to each of the pallets, the wheels and the driving wheels have the same number of angularly equally spaced notches on their peripheries, each of the link bodies is coupled to the shaft of the roller and fixed to the endless chain, the latter fixation being made by means of at least one pin, and the notches of the wheel engage with the shafts of the rollers and, at the same time, the notches of the driving wheel engage with the pins of the link bodies when the driving wheels are driven, whereby the pallets travel on the upper and lower pairs of rails alternately and circulatingly.

3,868,028
GRAIN DISTRIBUTOR

Robert Mausser, Walker, Iowa 52352

Filed Jan. 19, 1973, Ser. No. 325,207
Int. Cl. B65g *65/30*
U.S. Cl. 214—17 C **4 Claims**



1. A distribution device for granular material such as grain and the like that is to be stored in a bin having a side wall and a roof with a fill opening providing an enclosed space, said distribution device comprising a hollow upper portion having an inlet opening and a discharge opening beneath said inlet opening, said upper portion providing a flow path for grain

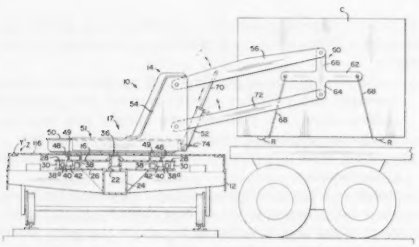
between said inlet opening and said discharge opening, a lower portion positioned beneath the discharge opening of the upper portion and having a distribution surface that directs grain discharged from the upper portion outwardly in all directions, said lower portion including a plurality of separate sections, said sections being movable relative to each other to vary the angle of the said distribution surface thereby changing the pattern of distribution of the granular material, said distribution surface of said lower portion having an opening directly beneath the discharge opening of the upper portion, and means mounting said upper portion and said lower portion in a fixed position relative to each other with the distribution surface of the lower portion spaced from the discharge opening of the upper portion.

3,868,029

LOADING APPARATUS FOR RAILROAD FLAT CARS

Stephen Goby, 10308 Wilbur Ave., Cleveland, Ohio 44106

Filed Oct. 10, 1972, Ser. No. 296,313
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 R **4 Claims**



1. In combination with a railroad flat car having a flat support surface defining a plane,

a support plate means positioned on the flat car for arcuate movement, said support plate means having a surface coplanar with said car support surface,

complementary mating arcuate surfaces being provided between said support plate means and support surface to permit arcuate movement of said support plate means,

a pair of frame means on spaced portions of said support plate means,

a pair of side members for container load support,

lever means mounted on said frame means operatively connecting to said side members for raising and lowering said side members and any load engaged thereby, whereby said side members are used to raise and lower a load to transfer the load between the support surface or the support plate means and an exterior surface,

a powered means connecting said lever means to said frame means for controlled movement of said lever means, an equalizer arm pivotally extending between and connecting said frame means to said side members, said equalizer arms being parallel to said lever means, a pair of lever means and equalizer arm units being provided, said equalizer arms and said lever means being pivotally connected to vertically aligned center portions of said side members to provide vertical load lift and support stabilization action, and

said support plate means including an upper revolve section and a lower revolve section of less diameter than said upper revolve section, a roller bearing support means for said lower revolve section which is of smaller diameter than the width of the car, and

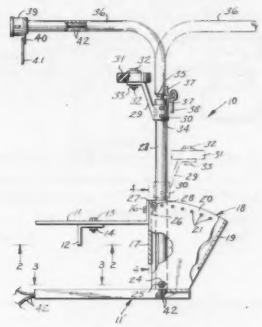
said frame means being positioned parallel to each other and extending longitudinally of the flat car beyond said upper revolve section.

3,868,030

BOAT GUIDE DEVICE

Larry E. Bell, 2881 33 Ave., Sacramento, Calif. 95824

Filed Apr. 18, 1973, Ser. No. 352,119
Int. Cl. B60p *3/10;* **B62d** *33/08*
U.S. Cl. 214—84 **5 Claims**



1. A boat guide device for boat trailers, comprising a pair of boat guides, one for each side of a trailer, each said boat guide including a quadrant member, a vertically extending pipe pivotally connected at its lower end to a lower portion of the quadrant, a plurality of apertures spaced along the upper edge of said quadrant, a loop carried by said pipe for selectively angularly securing said pipe along the upper edge by a bolt fastener means engageable with said loop and one of said apertures, a wheel bracket and sleeve carried by said pipe and having rubber wheel means for guiding and protecting the sides of the boat, an L-shaped pipe member having a horizontal pipe portion pivotally carried by said pipe and including stop-light means and a license plate supporting bracket at the free end of said pipe portion; means for mounting said boat guide to the trailer including an L-shaped bar member and a channel member, each said member secured to said quadrant in vertically spaced relation with each other, L-shaped bracket means adjustably carried by said bar member, means on said bar and channel members for adjustably sucuring said quadrant to the boat trailer, nipple means interconnecting said pipe and L-shaped pipe member together and an angle clip means with wire pin means for selectively securing said pipe and pipe member together against relative movement.

3,868,031

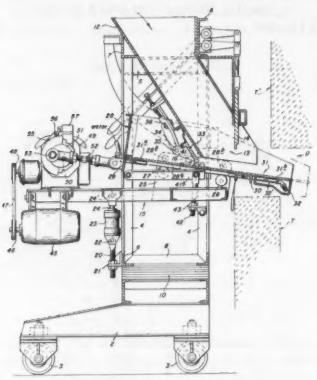
GLASS BATCH FEEDING METHOD

John Earl Frazier, and Clifford F. Crouse, both of Washington, Pa., assignors to Frazier-Simplex, Inc., Washington, Pa.

Division of Ser. No. 197,007, Nov. 9, 1971, Pat. No. 3,780,889.
This application Sept. 17, 1973, Ser. No. 397,948
Int. Cl. C03b *3/00*
U.S. Cl. 214—152 **3 Claims**

1. The method of supplying batch material to the charging end of a glass melting furnace which comprises transferring the batch material from a hopper to said charge-receiving end of the furnace on a reciprocable charger plate having a forward and return stroke and having a depending water-cooled lip at its forward end, lowering the slope of the charger plate with respect to the furnace near the end of each forward

stroke of the charger plate and returning it to its initial slope before the next forward stroke ,and discharging the batch

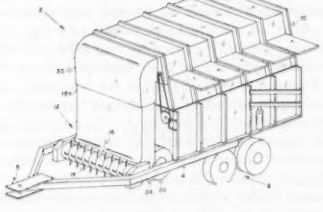


material from the charger plate into the furnace on the return stroke.

3,868,032
AIR DELIVERY SYSTEM

Ezra Cordell Lundahl, Idaho Falls, Idaho, assignor to Ezra C. Lundahl Inc.,, Logan, Utah

Division of Ser. No. 195,549, Nov. 4, 1971, Pat. No. 3,734,568. This application Mar. 21, 1973, Ser. No. 343,325The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.
Int. Cl. B60p *1/21*
U.S. Cl. 214—522 **1 Claim**

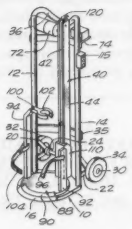


1. A wagon for loosely receiving a crop comprising:
a crop-receiving body;
the body comprising a lower portion and an upper compacting portion;
power means for reciprocating the upper compacting portion of the body generally down into and up from within the lower portion of the body to compact the crop within the body;
apparatus disposed to blow the crop received from a field into the body;
the apparatus comprising a generally vertically extending air influent duct comprised of at least two telescopically interrelated sections, one section being reciprocated with the upper section of the body toward the other section thereby substantially reducing the combined end-to-end length of the duct during compaction the duct being provided with a discharge opening communicating to said body and the other section being stationary.

3,868,033
LIFTING TRUCK, PARTICULARLY ADAPTED FOR CYLINDRICAL CONTAINERS

Henry Antoine Le Duff, 4411 Eleventh Ave., Los Angeles, Calif. 90043

Filed June 14, 1973, Ser. No. 369,794
Int. Cl. B65g *65/04*
U.S. Cl. 214—707 **9 Claims**



1. As an article of manufacture, a lifting truck, particularly adapted for lilfting cylindrical containers comprising, in combination:
a frame having a base platform and upright side column members and a further upright member for guiding an endless chain, the platform and upright side members being configurated to receive a cylindrical container;
an endless chain associated with and guided by the upright guide member;
a container lifting platform carrying a shoe member having hinged attachment to the endless chain by pivotal attachment of the shoe member to the chain at a point spaced from the platform whereby at the upper end of travel of the chain the shoe and lifting platform will tilt the container laterally to facilitate its removal and repositioning; cushioning means supported at the top of said upright member positioned to have the container rested thereon when tilted sideways during removal from the truck;
stabilizing means carried by said lifting platform for holding the container in position while being lifted, said stabilizing means including means adapted for engaging and holding a narrow neck of a bottle type container, said means for engaging and holding the bottle neck being an arm pivotally mounted on said lifting platform in position to be lowered after the bottle is in place on the lifting platform into a position for engagement with the neck of the bottle, said arm having an opening defined therein for engaging the neck of the bottle and into which the neck of the bottle may be inserted; and
controllable drive means for the endless chain whereby the lifting platform supporting the container may be lifted to a position at the upper ends of the upright side column members at which position the container can be tilted sideways and positioned for dispensing therefrom.

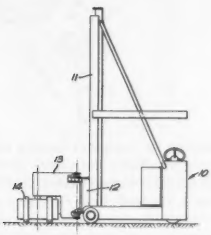
3,868,034
INDUSTRIAL LIFT TRUCKS

Cecil Goodacre, and Peter Alfred Leggett, both of Basingstoke, England, assignors to Lansing Bagnall Limited, Hampshire, England

Filed May 4, 1973, Ser. No. 357,383
Claims priority, application Great Britain, May 8, 1972, 21443/72
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **4 Claims**

1. An industrial lift truck comprising:
a mast structure;
a load lifting carriage movable up and down said mast structure;

a turret head mounted on said load lifting carriage for sideways movement relative thereto;
a load supporting structure mounted on said turret head for rotation relative thereto about an upright axis;
an electric motor mounted on said turret head;
a switch controlling the operation of said motor;
a reversible transmission, said motor being drivably connected to said load supporting structure for rotating same through said reversible transmission;
a releasable frictional brake assembly comprising a pair of brake callipers, and spring means for biasing said callipers into braking engagement with a cylindrical member which is rotatable with said transmission so as to restrain it against movement; and



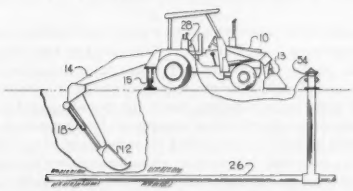
means for releasing said brake assembly when said motor is operated, said means comprising an electrically operated solenoid, and a switch controlling the operation of said solenoid, said switch being coupled for simultaneous operation with said first-mentioned switch controlling said motor, so that operation of said solenoid produces movement of said callipers out of braking engagement with said member against the action of said spring means when said motor is operated, whereby the brake assembly is selectively operable to hold said load supporting structure in any desired position, including three working positions whereat said load supporting structure is directed forwardly or to either side, further said brake callipers serving as an overload device to permit frictional rotation of said cylindrical member if sufficient external force is applied to said cylindrical member.

3,868,035

EARTH WORKING MACHINE PROTECTOR

Johnny Lee Broyles, McKinney, Tex., assignor to Tripple "I" Products, Inc., McKinney, Tex.

Filed Sept. 21, 1973, Ser. No. 399,551
Int. Cl. E02f *9/24*
U.S. Cl. 214—762 **3 Claims**



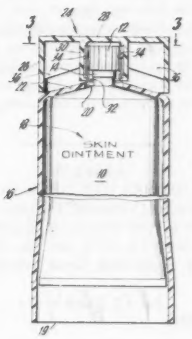
1. In an earth working machine having
a. a vehicle,
b. an earth working tool connected to the vehicle by
c. movable structure,
d. a hydraulic pump mounted on the vehicle,
e. hydraulic hoses connecting said pump to at least one
f. hydraulic motor attached to the movable structure whereby the earth working tool is manipulated,
g. said hoses including a high pressure line from the pump to the motor, and
h. detecting means for detecting that the tool is proximate an obstruction,
j. the improved structure comprising:
k. a bleed valve attached to the high pressure line,
m. said valve connecting the high pressure line to a low pressure point,
n. an electric solenoid controllingly attached to said valve,
o. said valve open unless the solenoid is energized, and
p. a key operated switch electrically connected to said solenoid,
q. said switch forming means for de-energizing said solenoid responsive to operation of said switch.

3,868,036

SAFETY PACKAGE FOR COLLAPSIBLE TUBES

John C. Wittwer, Armonk Rd., Mount Kisco, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,815
Int. Cl. B65d *11/16, 55/02*
U.S. Cl. 215—12 **5 Claims**



1. A safety package for use in combination with a flexible squeeze tube of the type made of a material that can be broken by a child to enable the child to reach the contents of the tube and having a discharge opening formed in a reduced-diameter neck that extends from the tube, a closure cap being removably secured to the neck to cover the discharge opening when the tube is not in use to dispense material therefrom, said safety package comprising a sleeve member made of a flexible material that cannot be broken by a child, said sleeve member being shaped and dimensioned so as to enclose the squeeze tube, a permanently sealed lower end portion for receiving and retaining the lower end of the squeeze tube, and a tapered upper end portion having an opening therein of a diameter greater than that of the tube neck portion through which the neck portion passes, said tapered end portion enclosing the upper end of the squeeze tube and providing, along with said sealed lower end, means for permanently retaining the squeeze tube within said package.

3,868,037

CONTAINER AND SAFETY CLOSURE THEREFOR

Milton J. Grossman, Whittier, Calif., assignor to J. Carroll Baisch, Whittier, Calif., a part interest

Filed Oct. 2, 1972, Ser. No. 294,007
Int. Cl. B65d *55/02*
U.S. Cl. 215—216 **12 Claims**

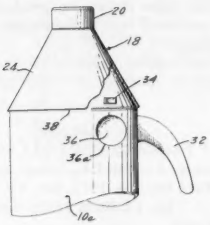
1. The combination of:
a container of resilient material, said container having a tapered upper portion terminating in a pouring neck, said

container having at least one locking part on said tapered portion;

and a closure device for said container, said closure device comprising:

a hollow closure portion for attachment to the neck of the container, said closure portion being closed by a wall at one end and is open at the other end;

a frusto-conical skirt flaring from the open end of the closure portion, said skirt being open at its free end which is opposite said closure portion;



at least one complementary locking part for the skirt adjacent the free end thereof, said locking part of the skirt being for releasable interlocking engagement with the locking part of the container when the closure device is in sealing position on the neck of the container, said locking parts being released by inward pressure on a place on the container adjacent the locking parts.

3,868,038

CLOSURES FOR CONTAINERS

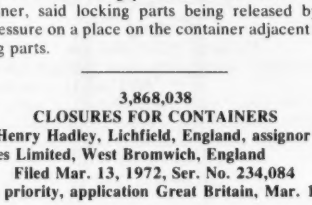
William Henry Hadley, Lichfield, England, assignor to Metal Closures Limited, West Bromwich, England

Filed Mar. 13, 1972, Ser. No. 234,084

Claims priority, application Great Britain, Mar. 15, 1971, 6888/71

Int. Cl. B65d *41/04*

U.S. Cl. 215—305 **4 Claims**



1. A closure blank for application to a screw-threaded bottle by a thread rolling operation wherein the bottle has a cylindrical seal surface above the threads, said blank comprising a single piece cup-shaped metal shell having a top and a skirt, joined together at and continuous with a radiused corner, formed with an outwardly directed bead at its lower margin; and a layer of gasket material bonded to the inner surface of the top and extending around said radiused corner to form an annular seal the invention comprising said shell being formed with an upper band of outwardly pressed knurling at the upper margin of the skirt adjacent said radiused corner radially outwardly of and overlapping at least in part said annular seal and a lower band of knurling in said bead, said outwardly pressed knurling having outwardly extending ribs and the metal therebetween having a diameter approximating that of the lower portion of said skirt the positioning of said annular seal radially inwardly of said outwardly pressed knurling and the knurling on the lower bead permitting material economy by permitting minimum overall closure height consistant with forming a side seal between said gasket material and the cylindrical sealing surface of the bottle while also providing sufficient purchase to allow removal of said closure from the bottle by hand.

3,868,039

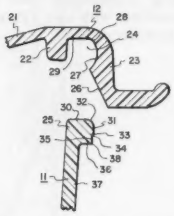
VACUUM SEALED FLUID COLLECTION BOTTLE

Legrand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

Filed Oct. 17, 1973, Ser. No. 407,232

Int. Cl. B65d *47/00*

U.S. Cl. 215—309 **7 Claims**



7. In combination, a container having opposite, wall surfaces and forming a radially outwardly extending lip said lip having a central annular planner edge, and an annular planar lower edge, and a resilient cover having an annular, outer flange portion and a mutually spaced, interior depending bead, said outer flange portion and bead engaging said opposite wall surfaces and thereby mutually receiving said lip of said container whereby said exterior edges sealingly penetrate the exterior of said flange of said cover.

3,868,040

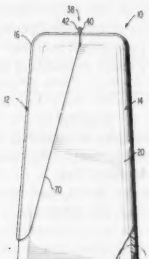
EQUIPMENT COVERING

Holger C. Langmack, Jr., Chancellor Point Rd., Trappe, and James B. Spear, Eveland Rd., Ridgley, both of Md.

Filed Oct. 30, 1973, Ser. No. 410,996

Int. Cl. E04h *5/04*; **E04b** *1/32*

U.S. Cl. 220—18 **8 Claims**



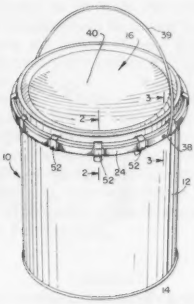
1. In assembly, a covering for electrical equipment and the like, comprising a shell structure fabricated in two pieces of moldable plastic with one of said pieces being mounted to the other of said pieces for pivotal movement relative thereto, said other of said pieces including means for mounting said shell in fixed relation to the electrical equipment being covered, both said pieces including cooperating means utilized to secure said pieces to each other, whereby when said pieces are assembled, said shell structure includes front and rear walls, side walls, a top wall and a terminal surface defining an open end, wherein said one of said pieces defines a portion of said front wall, portions of said side walls and a portion of said top wall, while the other of said pieces defines the remaining portion of said front wall, said rear wall, the remaining portions of said side walls, the remaining portion of said top wall and said terminal surface.

3,868,041

CAN OR CONTAINER WITH RESEALABLE LID

Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 341,861
Int. Cl. B65d *45/32*
U.S. Cl. 220—324 **9 Claims**



1. A can or container having a body with a closed bottom and an open top, with said body having a top edge, a removable cover for closing the open top, a rim formed separately from the body of the container and extending around the exterior of the body and adjacent the top edge of said body, said rim being shaped to provide upper and lower vertically extending wall portions positioned contiguous to the exterior of said container body with said vertically extending exteriorly spaced wall portion comprising an offset intermediate portion extending between said upper and lower vertically extending wall portions, with said vertical wall portions connected to the vertically offset intermediate portion of the rim by laterally extending connecting walls at the top and at the bottom, said cover having an inverted U-shaped peripheral portion which seats over the top edge of said body for sealing engagement therewith to permit the cover to be repeatedly removed and reapplied to close said container opening, said cover having an outer peripheral bead which is in engagement with the top connecting wall portion of the rim to limit the downward movement of said cover when on said container, and a clip detachably engaging said rim and said cover for securing said cover to said container, said clip adapted to be removed to permit removal of said cover.

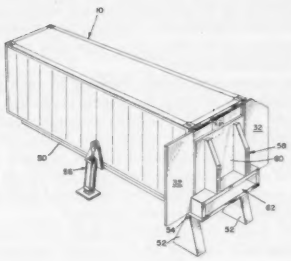
3,868,042

BULK CARGO HANDLING SYSTEM

Bert A. Bodenheimer, Stamford, Conn., assignor to Sea-Land Service, Inc., Elizabeth, N.J.

Division of Ser. No. 83,952, Oct. 26, 1970, Pat. No. 3,696,952, which is a continuation-in-part of Ser. No. 21,966, March 23, 1970, Pat. No. 3,610,479. This application Feb. 9, 1972, Ser. No. 224,759
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **16 Claims**

1. A liner for positioning within a conventional freight container having walls defining an opening normally closed by door means, and adapted for receiving, transporting and discharging bulk cargo comprising: an elongated, lightweight, flexible, bag member having at least one open end and having a configuration conforming generally to the interior length and width of a freight container; lightweight, flexible bulkhead means adjacent at least the open end of said elongated, flexible bag member; said flexible bulkhead means being yieldable to transmit forces applied by bulk cargo within the liner directly to the container door means; means retaining a substantial portion of said elongated bag to said yieldable bulkhead means for substantially closing said flexible bag member, said yieldable bulkhead means defining first opening means for loading bulk cargo and second opening means spaced from said first opening means for unloading bulk cargo; and means



normally sealing said second opening means until bulk cargo is to be unloaded from the liner.

3,868,043

NO-SPILL HOT CUP LID

Howard R. Freemyer, P.O. Box 21, Jayton, Tex. 79528

Filed Sept. 14, 1973, Ser. No. 397,266
Int. Cl. A47g *19/22*
U.S. Cl. 220—90.4 **10 Claims**

1. A no-spill cup lid adapted to fit over a cup filled with hot liquid such as coffee comprising:

a. a circular circumferential flange adapted to snugly fit over the rim of the cup,

b. a cover panel extending within the confines of the flange to cover the cup,

c. a drinking section of the lid at an edge of the panel,

d. the section perforated along its boundary,

e. said perforated boundary extending over less than one-third the circumference of the lid at the edge of the lid,

f. said section extending across the lid less than one third the diameter of the lid, and

g. the panel sloped downward from the edge to the drinking section.

3,868,044

SHEET-HOLDING DEVICE IN SHEET-DISPENSING MACHINE

Masahiro Abe, and Hiroshi Terada, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-Ken, Japan

Filed Nov. 29, 1972, Ser. No. 310,552
Claims priority, application Japan, Nov. 29, 1971, 46-97164; Nov. 30, 1971, 46-112710; Nov. 30, 1971, 46-96664
Int. Cl. B65h *3/44*
U.S. Cl. 221—6 **2 Claims**

1. A sheet-dispensing machine for dispensing sheets selected from a plurality of groups of sheets of different kinds

such as a plurality of groups of monetary sheets of different monetary kinds and comprising:

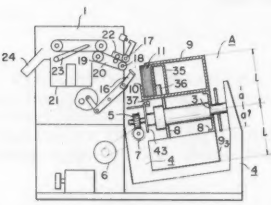
a plurality of sheet-containers each for containing sheets of a specific monetary kind and having a sheet-dispensing end from which the sheets contained therein may be dispensed up to a pre-determined limited quantity, said sheet-containers having dimensions corresponding to the dimension of the sheet of a respective monetary kind to be contained therein;

holding means operatively disposed in each container for continuously holding the sheets contained therein in a closely contacting parallelly-arranged stack and being adapted to follow the movements of said stack in a direction toward the dispensing ends of each container as sheets are successively dispensed therefrom to a completion position when said predetermined limited quantity of dispensed sheets has been attained;

support means for supporting said sheet-containers in a substantially angular array so that successive containers in the array contain sheets having a monetary value of a pre-selected sequence of monetary values;

rotatable driving means for rotating said support means so as to bring the sheet-dispensing ends of sequentially selected ones of said sheet-containers to a sheet-dispensing position where a desired number of sheets container therein can be dispensed;

detecting means for detecting the decrease in the number of sheets contained in each of said sheet-containers as sheets



are successively dispensed therefrom, said detecting means including magnetic means operatively associated with each of said sheet-containers and being adapted to move in accordance with the following movements of said holding means disposed therein, and switch means operatively associated with each of said containers so that as said holding-means completes a following movement to said completion position consequent upon the decrease of number of sheets contained in their respective one of said containers position that a sheet-dispensing position, said magnetic means is brought into operative association with said switch means and actuates the same to generate a signal representative of the fact that said predetermined limited quantity has been attained;

adjustable support means for supporting said switch means and operatively associated with said rotatable driving means, whereby said switch means is automatically adjusted in response to the different dimensions of said sheet-containers so that said signal may be correctly generated irrespective of which one of said containers is disposed adjacent said sheet-removing position;

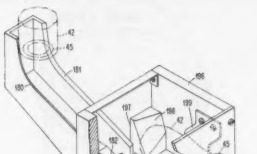
sheet-dispensing means operatively associated with said sheet-containers for dispensing sheets from respective sequentially selected ones of said sheet-containers when the sheet-dispensing ends thereof are brought to said sheet-dispensing positions; and

sheet-receiving means for receiving the sheets dispensed from said sheet-dispensing means.

3,868,045
ARTICLE CONVEYING

Spencer A. Snell, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,609
Int. Cl. B65g *11/20*
U.S. Cl. 221—194 **10 Claims**



1. Article handling apparatus having an upwardly opening input port and a side opening output port, and adapted to handle an elongated cylindrical article,

the improvement including in combination:

a concave arcuate slide extending downwardly from adjacent said input port and having an approximate horizontal end portion remote from said input port;

a horizontally pivoted, horizontally elongated cradle having one end adjacent said slide for receiving articles therefrom, said cradle including a counter weight portion along a first elongated side, a pivot member pivotally supporting said cradle closer to a second elongated side than said first elongated side such that the cradle is horizontal when empty and pivots downwardly toward said second side when an article is thereon;

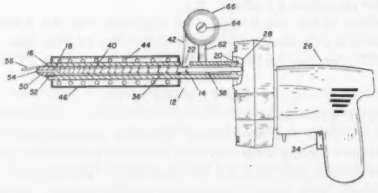
a spring-loaded interposer at said horizontal end portion positioned to yield to an article on said slide but nonyieldable to an article on said cradle, and

a planar ramp extending downwardly from said second elongated side to said output port.

3,868,046
EXTRUDER

John Maddalena, Ringoes, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,810
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HE **3 Claims**



1. Portable apparatus for applying a sealant to a surface comprising:

a portable extruder which can be hand held and moved and operated by hand, said extruder having

a. an elongated barrel,

b. an extruding screw coaxially and rotatively mounted within the barrel,

c. a feed port for sealant toward one end of the barrel and which extends through the side of the barrel and com-

municates with the interior thereof adjacent the extruding screw,

d. a sealant extrusion orifice located toward the end of the barrel opposite the end at which the feed port is located,

e. means for heating the barrel,

f. a power head attached to the screw and whereupon applying power to the head the extrusion screw is rotated and a sealant can be drawn into the barrel, conveyed along the length thereof and then discharged through the extrusion orifice by rotation of the extrusion screw,

B. hand grip means on said extruder for holding, moving and thus guiding the extrusion orifice by hand over a surface onto which the sealant is applied, and

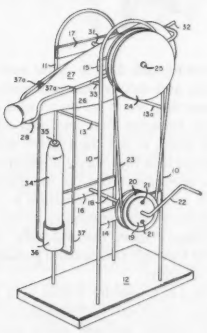
C. a reel rotatively mounted on the extruder and a sealant rope wound upon the reel and extending from the reel to said feed port, said rope being drawn from said reel and into the extruder barrel upon rotation of said extruding screw in the barrel.

3,868,047

WINE DECANTER

Donald Bersano, 15350 Winchester Blvd., Los Gatos, Calif. 95030

Filed June 25, 1973, Ser. No. 373,519
Int. Cl. B67d *5/64*
U.S. Cl. 222—166 **1 Claim**



1. In apparatus for decanting wine and the like the combination comprising a main frame, means comprising a cradle-shaped frame for supporting a bottle with wine therein, stub shafts attached to opposite sides of said cradle-shaped frame journaled on said main frame for pivotally supporting said cradle-shaped frame on said main frame, means for gradually tilting said supporting means to bring said bottle into its wine pouring position, a light source, means attached to one of said frames for supporting said light source under the neck of said bottle, said light source projecting rays of light through the neck of said bottle to illuminate the wine as said wine is poured from said bottle to render any solid matter flowing out of said bottle with said wine visible.

3,868,048

APPARATUS FOR DEPOSITING A FIRST FOOD SUBSTANCE UPON A SECOND FOOD PRODUCT

Arnold Soodalter, University Park Apartments Apt. M-1, Holyoke, Mass. 01040

Filed Jan. 14, 1974, Ser. No. 432,961
Int. Cl. B67d *5/48*
U.S. Cl. 222—380 **2 Claims**

1. Apparatus for transferring measured increments of a first food substance with respect to and in timed relation with the stop and go operating cycle of a second food substance handling machine dispensing increments of a second food substance comprising:

a. a container for containing a quota of the first food substance;

b. a dispensing head for dispensing increments of the first food substance with respect to dispensed increments of the second food substance;

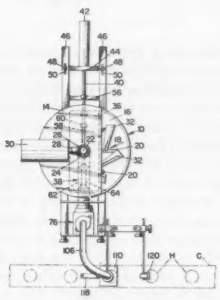
c. a transfer housing intermediate and communicating with the container and dispensing head;

d. a piston reciprocally receivable within the container for transferring the first food substance from the container through the transfer housing to the dispensing head;

e. an air cylinder for loading the piston and imparting thereto a feeding stroke in one direction and a non-feeding stroke in counter direction;

f. control means for alternately controlling the actuation of the air cylinder in feeding and non-feeding strokes responsively to the stop and go movements of the second food substance handling machine;

g. a first pressure-operable by-pass valve disposed between the dispensing head and transfer housing and operative by a spring of relatively great tension and being in a normal-



ly-closed position with respect to communication between the transfer housing and dispensing head;

h. a second pressure-operable by-pass valve disposed between the container and transfer housing and operative by a spring of relatively small tension and being in a normally-closed position with respect to communication between the transfer housing and container;

i. the second by-pass valve on the retrograde stroke of the piston being opened by the pressure of the first food substance for permitting the passage thereof into the transfer housing with the first by-pass valve being closed by the spring of relatively great tension;

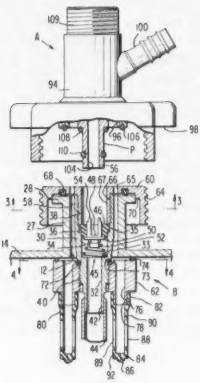
j. the second by-pass valve on the pressure stroke of the piston being opened and the first by-pass valve being opened by the pressure of the first food substance for permitting the passage thereof from the transfer housing to and through the dispensing head and onto the second food substance; and

k. means for exerting continual pressure upon the first food substance within the container for moving the first food substance into the path of the piston comprising a cluster of vanes rotatably mounted and vertically reciprocable within the container.

3,868,049
KEG TAPPING DEVICE

Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif.

Continuation of Ser. No. 83,675, Oct. 23, 1970, , which is a continuation of Ser. No. 782,204, Dec. 9, 1968,. This application Nov. 28, 1972, Ser. No. 310,039
Int. Cl. B65d *83/00*
U.S. Cl. 222—400.7 7 Claims



1. A liquid dispensing apparatus comprising a keg, said keg having top, bottom and side walls with an opening in one wall, said one keg wall having an outwardly projecting substantially cylindrical portion about the keg opening, a keg adapter including a member receivable within the opening in the one keg wall and having a fluid outlet passage therethrough for the transfer of fluid from the inside to the outside of the keg, a normally closed valve in said fluid outlet passage, means for retaining said member within the keg wall opening, means comprising at least a portion of said member defining a fluid inlet passage through the keg opening for the transfer of fluid from the outside to the inside of the keg, a pair of discrete check vlaves, each of said check valves including a closed flexible envelope in communication with said inlet passage and having spaced side walls and an end wall with an elongated slit in at least one of said walls, said fluid inlet passage means including a part having a lateral dimension greater than the diameter of the keg opening and a pair of passageways through said part forming a portion of said fluid inlet passage, said check valves lying in communication with said passageways, and sealing means engaging between said part and a keg wall portion about the opening, said member comprising a reduced diameter sleeve, said fluid inlet passage including a substantially annular passage formed between said member and said cylindrical keg wall portion, said retaining means including a ring coupled to said member and having a plurality of openings in communication with said annular passage and a seal disposed between said ring outwardly of its associated openings and the cylindrical wall portion of said keg, said sealing means engaging between said part and an interior portion of said keg wall.

3,868,050
VALVE ASSEMBLY FOR SEMI-FROZEN COMMODITY

Carl Gorychka, Beloit, Wis., and Richard M. Keyes, Rockford, Ill., assignors to Beatrice Foods Company, Chicago, Ill.

Filed Oct. 29, 1973, Ser. No. 410,901
Int. Cl. B67d *5/06*
U.S. Cl. 222—509 4 Claims

1. In a semi-frozen commodity confection machine of the type which operates under positive pressure, a valve assembly for dispensing a semi-frozen commodity comprising:

a block member comprising a first passage having a receiving port communicating with the machine for receiving semi-frozen commodity and a rear port, a second passage having a first port communicating with said first passage and a dispensing port for dispensing the commodity, said second passage being inclined relative to said first passage, and a ring portion having an inner area communicating with said rear port;

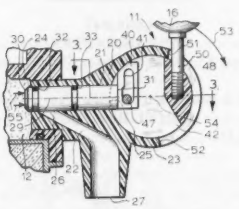
a piston movably positioned within said first passage and having first and second ends;

a piston block member coupled to said second end of said piston and having an elongated slot therein;

a bifurcated disc comprising two arms within said ring, said disc being free to rotate therein, and having a slot in each said arm, said slots being aligned with each other;

said piston block member positioned in between said bifurcated disc arms and said block member slot being aligned with said aligned arm slots;

a pin extending through said piston block member slot and said aligned arm slots; and



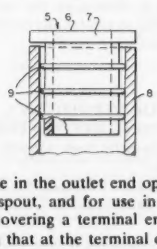
means for rotating said disc to cause said pin to travel in a circular path and ride within said piston block member slot for imparting linear travel to said piston within said first passage between first and second travel positions, said piston being in a closed valve position within said first passage at said first travel position to preclude transfer of the commodity from the machine to said first passage, and in an open valve position at said second travel position to allow the commodity to be transferred under positive pressure from the machine, through said first passage, and through said second passage to be dispensed therefrom whereby,

said piston travels linearally within said first passage, and after closing of said valve, the residual frozen commodity within said second passage melts and runs down said inclined passage precluding blockage of said valve.

3,868,051
DRIPLESS PLASTIC POUR SPOUT INSERT

Sven Karl Lennart Goof, 236 A Gammel Strandrej, 3050 Humlebaek, Denmark

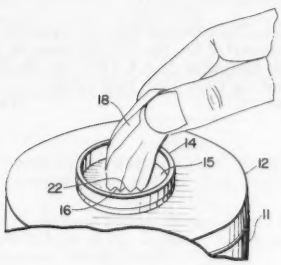
Filed Feb. 16, 1972, Ser. No. 226,956
Claims priority, application Denmark, Feb. 18, 1971, 736/71
Int. Cl. B67d *5/74*
U.S. Cl. 222—571 13 Claims



1. A liner for use in the outlet end opening of a container having a pouring spout, and for use in pouring of aqueous liquid, said liner covering a terminal end of said spout and being located such that at the terminal end of the spout said liquid when poured terminally contacts only the liner, the improvement wherein at least the surface of that part of said

liner which said liquid by pouring terminally is in contact with consists essentially of polytetrafluoroethylene.

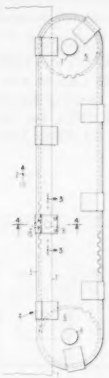
3,868,052
MOIST TISSUE DISPENSING
Winston G. Rockefeller, c/o Colgate-Palmolive Company, 300 Park Ave., Woodcliffe Lake, N.J. 10022
Filed Feb. 26, 1973, Ser. No. 336,057
Int. Cl. B26f *3/02*
U.S. Cl. 225—106 **2 Claims**



1. A sheet material dispensing package comprising a container enclosing a supply of premoistened liquid absorbent fibrous or equivalent flexible material such as paper in the form of successive sheets of predetermined size separated by weakened regions such as transverse perforations or scores, characterized by a wall of said container having during dispensing sa relatively narrow normally open aperture through which the leading sheet of said supply extends to be manually grapsed for full withdrawal by a consumer, the length of said aperture being materially less than a sheet of said material and the opposite edges of said aperture being spaced apart a distance materially greater than the thickness of said material at least over their major coextensive lengths, and said side edges being formed with laterally aligned relatively stiff sharp edged free projections extending into the aperture and terminating short of pressure engagement with each other but being adapted to operatively engage a weakened region of said supply with a tear force producing coaction during withdrawal of the leading sheet whereby separation of each leading sheet may be positive and reliable.

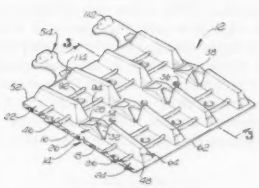
3,868,053
TRANSPORT DEVICE FOR WEB MATERIAL
Sieghard Arnold, Hildrizhausen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 15, 1973, Ser. No. 406,757
Claims priority, application Germany, Dec. 1, 1972, 2258802
Int. Cl. B65h *17/34*
U.S. Cl. 226—173 **5 Claims**

1. Transport device for web-like material, particularly for paper webs in high-speed printers of data processing systems, where an endless belt driven over pulleys is used, characterized in that the axles (7,8) of the pulleys (5,6) are substantially vertical to the plane of the web (1), and that on the belt (3) ball or roll clamping devices (4) acting in transport direction (2) are provided and arranged in such a manner that during its working cycle the belt (3) travels a greater distance



(3') than the clamping points (9') of the ball or roll clamping devices (4) with the web (1).

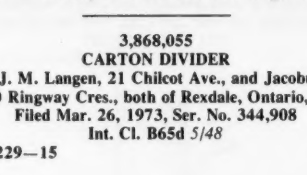
3,868,054
CONTAINER
Wayne Congleton, Whittier, Calif., assignor to Dolco Packaging Corporation, Burbank, Calif.
Continuation of Ser. No. 273,558, July 20, 1972, Pat. No. 3,834,609. This application Mar. 21, 1973, Ser. No. 343,605
Int. Cl. B65d *1/00*
U.S. Cl. 229—2.5 **13 Claims**



1. An improved container assembly, comprising:
a member which when unassembled is in a generally planar configuration and has first and second side edges;
a plurality of hinge lines formed in said member each along the axis of said container from said first side edge to said second side edge for enabling said member to be folded into a predetermined shape and for dividing the member into a first section, a second section and a central section, said central section interconnecting said first and second sections;
each of said section being formed with a plurality of hollow ribs formed by indentations therein spaced inwardly from the side edges and spaced one from another along the axis of said container, said ribs interacting when said member is folded along said hinge lines so as to form a structure of generally U-shaped cross-sectional configuration having a pair of free edges spacced one from the other which define the ends of said U-shaped configuration, and to divide said container into a plurality of discrete compartments; said

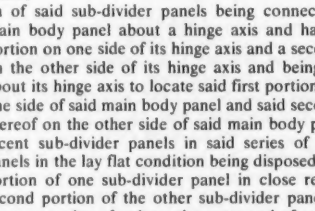
a tab member having a first end integrally formed with one of said edges and a free end adapted to be positioned adjacent the other of said edges for retaining said assembly in said U-shaped cross-sectional configuration.

3,868,055
CARTON DIVIDER
Marinus J. M. Langen, 21 Chilcot Ave., and Jacobus J. Langen, 10 Ringway Cres., both of Rexdale, Ontario, Canada
Filed Mar. 26, 1973, Ser. No. 344,908
Int. Cl. B65d *5/48*
U.S. Cl. 229—15 **1 Claim**



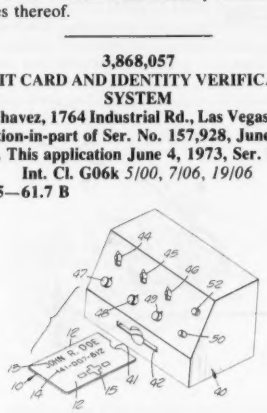
1. A lay flat cardboard divider blank, comprising:
a main body panel,
a series of similar single ply sub-divider panels cut from said panel,
each of said sub-divider panels being connected to said main body panel about a hinge axis and having a first portion on one side of its hinge axis and a second portion on the other side of its hinge axis and being swingable about its hinge axis to locate said first portion thereof on one side of said main body panel and said second portion thereof on the other side of said main body panel,
adjacent sub-divider panels in said series of sub-divider panels in the lay flat condition being disposed with a first portion of one sub-divider panel in close relation to a second portion of the other sub-divider panel and with the upper edge of at least the outer end of said first portion below the lower edge of said second portion whereby said first portion of each of said sub-divider panels is above the second portion thereof when said sub-divider panels are swung about their hinge axis to locate the first portion thereof on one side of said main panel and a second portion thereof on the other side of said main panel.

3,868,056
PROTECTIVE CONTAINERS AND METHODS OF MAKING THE SAME
Eitan Keren, Bronx, N.Y., assignor to Sealed Air Corporation, Fair Lawn, N.J.
Continuation of Ser. No. 120,896, March 4, 1971, abandoned. This application May 21, 1973, Ser. No. 362,169
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 **1 Claim**



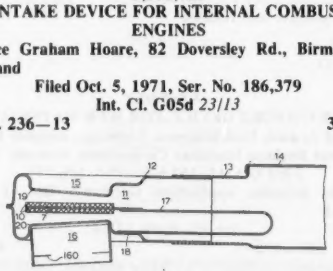
1. A protective container comprising an outer covering folded upon itself to form two layers disposed in overlying relationship and a seamless edge, a sheet of cellular material adhered to the inner facing surfaces of said outer covering, said cellular material having a first plastic sheet including a plurality of closely spaced embossments extending from one side thereof and a second plastic sheet secured to the other side of said first sheet, at least two opposing, substantially parallel marginal hermetically sealed edge zones and at least one open edge zone, the cellular material disposed within said marginal hermetically sealed edge zones and said open edge zone being crushed to collapse the cells in said cellular material and said hermetically sealed edge zones being folded and sealed to the adjoining surfaces of the container whereby said hermetically sealed edge zones impart a relatively high degree of stiffness to said container and thereby enhance the protective qualities thereof.

3,868,057
CREDIT CARD AND IDENTITY VERIFICATION SYSTEM
Robert C. Chavez, 1764 Industrial Rd., Las Vegas, Nev. 89102
Continuation-in-part of Ser. No. 157,928, June 29, 1971, abandoned. This application June 4, 1973, Ser. No. 366,762
Int. Cl. G06k *5/00, 7/06, 19/06*
U.S. Cl. 235—61.7 B **19 Claims**



1. An improved identity verification system, comprising:
a card, a plurality of contact points situated upon said card, first and second circuit means embedded within said card, three or more of said contact points being coupled to said first circuit means and providing a unique set of contact points, the remainder of said contact points being coupled to said second circuit means;
card reader means comprising contact means for establishing electrical contact with each of the contact points of said card, third circuit means in said reader means, a plurality of selector means electrically coupled between said contact means and said third circuit means for selectively coupling individual ones of said contact means to said third circuit means; and
indicator means coupled to said first and third circuit means, said indicator means providing an output signal when said first and third circuit means are coupled together.

3,868,058
AIR INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINES
Terrence Graham Hoare, 82 Doversley Rd., Birmingham, England
Filed Oct. 5, 1971, Ser. No. 186,379
Int. Cl. G05d *23/13*
U.S. Cl. 236—13 **3 Claims**



1. An air intake temperature control device for internal combustion engines which comprises:
a. a housing having two apertures therein disposed opposite and facing each other and adapted to serve as air inlets

for respective heated and unheated air flows, and an aperture adapted to serve as an air outlet for the mixed air flows,

b. a cantilever-like bi-metallic strip mounted at one end thereof in the housing and disposed in the path of the mixed air flows,

c. a valve-like vane rigidly mounted on the other end of the bi-metallic strip and disposed between the two opposed and facing air inlet apertures such as to control the relative flows of heated and unheated air according to the result temperature of the mixed air flows, said vane movable towards and away from said air inlets, said vane being sandwiched between discs of elastomeric material, the discs being each at least as large as its respective aperture,

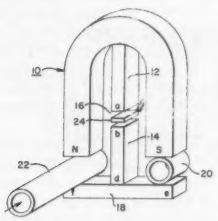
d. the heated air inlet aperture presenting a greater resistance to air flow than the unheated air inlet aperture, whereby during acceleration a pressure difference is generated across said vane, and in which the bi-metallic strip is resilient, whereby the said pressure difference deflects the strip and causes the valve to increase the ratio of unheated air during acceleration.

3,868,059

MAGNETIC BRIDGE-TYPE METER FOR MAGNETICALLY PERMEABLE PARTICULATE MATTER

William M. Hickam, Pittsburgh, and Robert G. Charles, Allison Park, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 7, 1974, Ser. No. 431,587
Int. Cl. F23n *1/02*
U.S. Cl. 236—15 E **8 Claims**



1. Apparatus for quantitatively analyzing the content of magnetically permeable particulate material in a fluid stream, comprising a magnetic bridge circuit having two magnetic loops each including a common magnetic flux path and leg portions connecting opposite ends of the commmon path, air gaps in the respective leg portions, means for conducting a fluid stream having said particulate material entrained therein through one of said air gaps, and means in said common path for sensing unbalance of the bridge circuit and for producing an electrical signal which varies as a function of the degree of unbalance, the arrangement being such that as the particulate material passes through the air gap, the bridge will become unbalanced and said electrical signal will be a measure of the amount of magnetically permeable material passing through the air gap.

3,868,060

CAMPER HEATING SYSTEM

John C. Mitchell, 2572 Elysium Ave., Eugene, Oreg. 97401

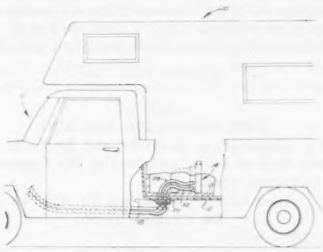
Filed Sept. 19, 1973, Ser. No. 398,647
Int. Cl. B60h *1/04*
U.S. Cl. 237—12.3 B **1 Claim**

1. A heating system for a truck mounted camper unit of the type removably mounted within the truck box, said system comprising,

a portable fluid to air heat exchanger including fan means, an enclosure for said fan means, inlet and outlet fittings, flexible inlet and outlet conduit segments serving the heat exchanger, valve means for regulating fluid flow through said segments and the heat exchanger,

quick-release coupling members of the self-sealing type,

means mounting said quick-release coupling members in a recessed manner below the camper supporting surface of the truck bed and serviced by hoses in communication with the trucks engine cooling system.



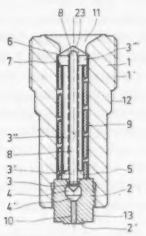
additional quick-release coupling members carried by said flexible inlet and outlet conduit segments for coupling with said mounted coupling members through an opening in a camper wall whereby the heat exchanger may be put into fluid circuit with the trucks cooling system subsequent to installation of the camper in the truck box or alternately uncoupled and removed from the camper without loss of engine coolant.

3,868,061

INJECTOR NOZZLE WITH SHUTOFF VALVE FOR INJECTION MOLDING MACHINE

Karl Hehl, Siedlung 183, Lossburg/Wuerttemberg, Germany

Filed Feb. 21, 1973, Ser. No. 334,419
Claims priority, application Germany, Feb. 21, 1972, 2208014; July 12, 1972, 2234156
Int. Cl. B05b *1/30*
U.S. Cl. 239—571 **15 Claims**



1. An injector nozzle with a pressure-responsive shutoff valve for injection molding machines and the like, comprising in combination:

a nozzle body assembly, including an elongated nozzle body having an inlet end and a discharge end, a central nozzle bore extending axially therethrough, and an inlet for pressurized flowing material into said bore;

an elongated valve plunger movably arranged inside the nozzle bore, the plunger including a plunger body, and at the discharge end thereof a plunger head having a substantially cylindrical seating portion, a plunger neck of a smaller diameter linking the plunger head to the plunger body;

a substantially cylindrical valve bore near the discharge end of the nozzle body assembly, the valve bore communicating with the nozzle bore and serving as a valve seat coop-

erating with said seating portion of the plunger head, the latter having an outer diameter for sliding contact inside said valve bore, the length of the valve bore being shorter than the length of the plunger neck so that the valve bore and the plunger neck define an annular flow channel, when the plunger is advanced toward the discharge end of the body to an open position in which the plunger head is disengaged from the valve bore;

means for guiding the valve plunger in its axial motion; and

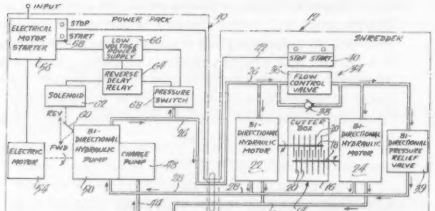
a spring engaging the valve plunger and biasing it from its open position toward its retracted position in which the plunger head is seated inside the cylindrical valve bore.

3,868,062

TIRE SHREDDING MACHINE

Charles L. Cunningham, Nashville, and Jimmie L. Holladay, Antioch, both of Tenn., assignors to The Coats Company, Inc., LaVergne, Tenn.

Filed Mar. 25, 1974, Ser. No. 454,066
Int. Cl. B02c *13/30*
U.S. Cl. 241—36 **4 Claims**



1. A shredding machine comprising: a cutting head including a pair of generally parallel, rotatable shafts each having cutting and feeding means thereon; a pair of bidirectional, rotational output, hydraulic motors, one for each shaft, for rotating the shafts in opposite directions; a hydraulic pump; means for driving said pump; conduit means connecting said pump to said motors in parallel and defining a closed loop; means associated with one of said pump and said conduit means operable to reverse the direction of flow of hydraulic fluid in said conduit means to thereby reverse the direction of rotation of said hydraulic motors; and pressure responsive means associated with said conduit means for sensing when the pressure therein exceeds a predetermined value for operating said reversing means for a predetermined period of time.

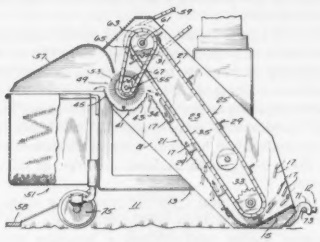
3,868,063

CORE PROCESSING MACHINE

Frank A. Slaker, New Brighton, Minn., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 16, 1973, Ser. No. 416,373
Int. Cl. B02c *21/02*
U.S. Cl. 241—101.7 **14 Claims**

1. A machine for processing soil cores which include soil and vegetable matter and which are produced in a core-producing machine, said core processing machine including a frame, a hopper supported by said frame in position to receive the soil cores from the core-producing machine, means for supporting said frame for travel over the ground with said hopper out of engagement with the ground under normal operating conditions, a first wall mounted on said frame and extending outwardly from said hopper and including an outer end and perforations between said hopper and said outer end, and first conveyor means for conveying soil cores in the direction from said hopper and along said first wall, whereby to



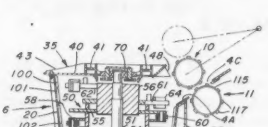
facilitate partial break-up of the soil cores and passage of soil from the cores through said perforations in said first wall.

3,868,064

APPARATUS FOR REDUCING AUTOMOBILE BODIES AND OTHER WASTE TO USABLE SCRAP

Stanley M. Coulter, Wexford, and Raymond P. Lombardi, Pittsburgh, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1973, Ser. No. 335,001
Int. Cl. B02c *13/16*
U.S. Cl. 241—186.4 **16 Claims**



1. Apparatus for reducing automobile bodies to fragments for metallurgical use with a mill comprising:

a. a shell of downwardly decreasing diameter with an internal liner,

b. a single rotor substantially centered in the shell having a pair of diametrically opposed knocker arms thereon, one below the other, and means below the arms providing a plurality of ring hammer units arranged around the rotor below the arms in a descending succession of levels, there being a downwardly decreasing clearance between the exterior of the rotor and the liner in the shell and at the bottom of the rotor there is a minimum clearance space for the discharge of fragments to a receiving means below the rotor,

c. the rotor having a depending shaft extending below the shell and having drive means for rotating the rotor at the lower end of the shaft,

d. an inclined chute of a width to receive an automobile endwise extending upwardly and outwardly from the shell and having a lower terminal portion passing through the shell and terminating therein in such position that the forward end of an automobile body upon reaching the lower end of the chute will be in the plane of rotation of said knocker arms, and

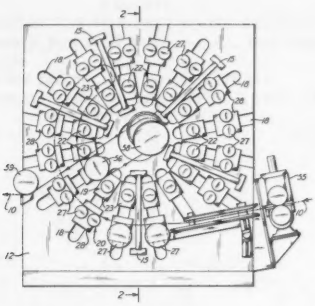
e. feed means comprising cooperating upper and lower power-driven rollers extending crosswise of the chute, said upper roller being movable vertically and being weighted to yieldably bias it downwardly toward the lower one.

3,868,065

ROTARY STRIP ACCUMULATOR

Wlodzimierz W. Maruszcak, c/o Henry C. Westin Esq., c/o Wean United Inc., 948 Fort Duquesne Rd., Pittsburgh, Pa. 15222

Filed Sept. 20, 1972, Ser. No. 290,690
Int. Cl. B65h *17/48*
U.S. Cl. 242—55 3 Claims



1. An accumulator for weblike material having a first series of rollers arranged to form a circular inner roller basket and a second series of rollers arranged to form a circular outer roller basket,

said two baskets being arranged relative to each other so that a number of convolutions of material can be wound into two distinct coils separated from each other by a reversible loop of material,

a frame for supporting said first and second baskets in a manner that the coils are formed with their major axes in an horizontal plane,

said frame includes a member arranged in a plane normal to the planes containing the axes of rotation of said rollers,

said member having a number of guide slots located radially to the axes of the formed coils,

means for rotatably supporting said rollers,

said roller supporting means received in said guide slots,

separate spider elements common to the rollers of a different one of said baskets for moving their respective baskets in said guide slots,

said frame including a central supporting means for carrying said spider elements in tandem fashion and in a manner that the elements are free to move parallel to the axes of the formed coils,

links for connecting said spider elements to their associated rollers so that on movement of the spider elements over said central supporting means their associated rollers will move radially in unison,

a piston cylinder assembly for each spider element for moving their respective baskets, and

said member of said frame arranged on one side of said frame for connecting said rollers of said first and second baskets to the frame in a manner that the rollers are cantileverly mounted relative to said frame and project away from said frame so that said rollers are open and unobstructed from said one side of said frame.

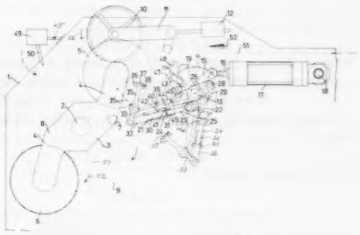
3,868,066

WINDING DEVICE FOR MAGNETIC TAPES

Horst Baumer, Auf dem Pol II, 5222 Lichtenberg, Germany

Filed Oct. 15, 1973, Ser. No. 406,447
Int. Cl. B65h *19/26*
U.S. Cl. 242—56 A 11 Claims

1. A winding device for magnetic tapes and the like, comprising, in combination: a turret mounted for at least pivotal movement; at least a pair of flanged reels removable supported in a symmetrical arrangement on said turret, some of said reels being coaxially stacked on said turret at a winding position; means for guiding a narrow recording tape and the like to at least one of said reels and for winding the tape thereon; means for laying the tape onto said one reel, and for severing the tape when said one reel is almost full; means for transferring the winding from said one reel to another reel, previously disposed on said turret at a location spaced apart from said winding position and constituting an exchanging position; said means jointly including a table pivoted at one end to a stationary member and movable toward and away from said one reel; the free end of said table protruding into the area of the flanges of said one reel when said means are brought into said winding position; said free end being swing-



able out of said area in a withdrawn, stand-by position of said means; a push rod carried on said table; a slide block slidably supported by said push rod; at least one striking and severing lever pivotably associated with said slide block, through the intermediary of control levers attached to said slide block; a pre-stressed pawl on said table for arresting said slide block; a plurality of severing arms, corresponding in number to that of said coaxially stacked reels at said winding position; a tensioning block slidably supported by said push rod; at least one rocker linking said stationary member to said tensioning block; and control and drive means for selectively operating in a coordinated manner said guiding means, said laying means and said transferring means, for at least partial rotation of said turret, driving of at least one of said reels, and pivoting of said table.

3,868,067

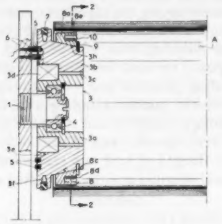
APPARATUS FOR DRIVING AND RELEASING A SUPPORT ON WHICH A BAND OR FILAMENT OF MATERIAL IS TO BE WOUND

Michel Cadillon, 83 rue Paul Verlaine, Villeurbanne/Rhone, France

Filed Oct. 15, 1973, Ser. No. 406,399
Claims priority, application France, Feb. 26, 1973, 73.07230; June 8, 1973, 73.21577
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.2 14 Claims

1. Apparatus for drivingly engaging and disengaging a hollow support on which is wound a band or filament of material, said apparatus comprising a fixed arm member, a rotatable member mounted on the fixed member, means for driving the rotatable member in rotation, a ring member mounted on said rotatable member and positionable within the hollow support, and electromagnetic means supported by one of said members and active on another of said members for (a) engaging the ring member in driving relation with the rotatable member

and with the support to establish a drive connection for said support and (b) decoupling the ring member from the rotatable member and disengaging said ring member from the support.



3,868,068

SEAT BELT RETRACTOR

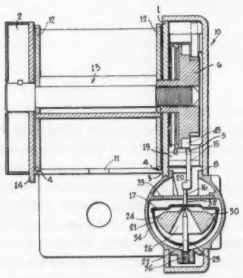
Robert Boyson Heath, St. Marys, South Australia, Australia, assignor to Kangol Magnet Limited, Carlisle, England

Filed Feb. 21, 1973, Ser. No. 334,199

Claims priority, application Australia, Feb. 22, 1972, 8040/72

Int. Cl. A62b *35/00*

U.S. Cl. 242—107.4 **7 Claims**



1. A seat belt retractor having an inertia sensing device which comprises a pin extending upwardly from means secured relative to a seat belt retractor frame, a weight having a central hollow in its under surface and supported by the upper end of the pin engaging the surface of the weight which defines said central hollow, an actuator plate positioned above the weight and arranged to engage the upper surface of the weight upon tilting of the weight on the pin, and a pair of spaced guide means co-operable with the actuator plate guiding the plate for movement in a direction co-axial with the pin, one of the guide means being above and the other being below the weight.

3,868,069

DEREELING APPARATUS

William J. Schulz, West Cornwall, Conn., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 6, 1974, Ser. No. 440,226

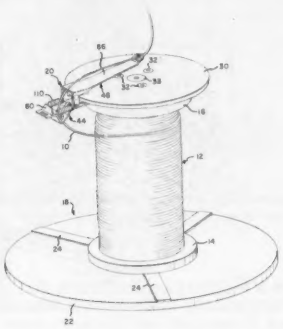
Int. Cl. B65h *49/00*

U.S. Cl. 242—128 **9 Claims**

1. A device for dereeling filamentary material from a stationary spool, said device comprising:

a base assembly including a weighted base plate, a spindle projecting centrally of said base plate, and at least one friction pad fixed to said base plate, and

a spinner assembly adapted to be mounted on the free end of said spindle, said spinner assembly including a disc fixedly mounted on and normal to said spindle, and an orbital caliper assembly adapted to coact with said disc, said caliper assembly comprising a first rotor arm rotatably mounted on said spindle, a second standoff arm mounted on a free end of said first arm, and a third caliper arm pivotally attached to said free end of said first arm, each said first and said third arm having a bore in the free end thereof and brake pads fixed to adjacent surfaces thereof to act on opposing surfaces of said disc, whereby tensioning of the filamentary material fed successively through the bores of said stand-off arm and said caliper arm disengages said brake pads from said disc allowing rotation of said spinner assembly.



3,868,070

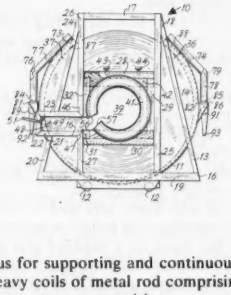
HEAVY COIL PAY-OFF

John R. Goodzey, Flora, Ill., and Robin L. Johnson, Jonesboro, Ind., assignors to The Anaconda Company, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,563

Int. Cl. B65h *49/00*

U.S. Cl. 242—129 **8 Claims**



1. Apparatus for supporting and continuously paying off a plurality of heavy coils of metal rod comprising helical layers of inner and outer turns, comprising:

A. first and second means horizontally supporting said coils on the outer turns thereof,

B. first and second vertical restraining means comprising a continuous outer periphery encompassing the area of said coils uprightly fixed to said support means, said restraining means being mounted side by side and each comprising a central opening for the forward passage of said rod and a flat area corresponding to an area of said coils and restraining said coils from forward movement,

C. walls defining a passage in said area of at least one of said restraining means, said passage communicating with said

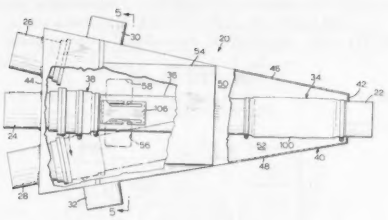
opening of said one of said restraining means and extending to a point radially beyond said outer turns, whereby a continuous length of rod passing from an outer turn of one of said coils, through said passage externally of said coil, and through said opening in the other of said restraining means joins an inner turn in another of said coils.

3,868,071

LINE SELECTOR FOR PNEUMATIC SYSTEMS

Peter Brinkerhoff Weaver, 5 Brushwood Ct., Don Mills, Ontario, Canada

Filed Jan. 30, 1973, Ser. No. 328,111
Claims priority, application Canada, Feb. 2, 1972, 133737
Int. Cl. B65g *51/18, 51/24*
U.S. Cl. 243—31 **18 Claims**



1. A line selector for use in pneumatic tube systems of the type used to transport carriers from station to station, the line selector comprising:

a main housing;

an inlet through which the carrier enters the main housing;

a main outlet and a branch outlet through which the carrier selectively leaves the line selector;

a flexible coupling located within the housing and attached at a first end thereof to the inlet the flexible coupling comprising a tubular coupling piece having an angled face at one end thereof; the inlet defining an end face adjacent said angled face and the angled face being removed from said end face when the seal assembly is in engagement with the main outlet and substantially in engagement with said end face when the seal assembly is in engagement with the branch outlets; a rolled spring in snug engagement with the outer surfaces of the coupling piece and the inlet for biasing the coupling piece into axial alignment with the inlet, the spring being resiliently deformed when the seal assembly is in engagement with said branch outlet; a shoe attached to an inner surface of the spring; the inlet and the coupling piece defining a pair of adjacent and aligned axial slots with the slot in the coupling piece being located at a part of the angled face most remote from the inlet end face when the seal assembly is in engagement with the main outlet; and said shoe located in said slots to guide a carrier passing through the flexible coupling so that the carrier does not snag on the angled face of the coupling piece;

a seal assembly coupled to the other end of the flexible coupling for receiving the carrier after the carrier leaves the flexible coupling;

the seal assembly and outlets defining means for locating the seal assembly selectively against each one of the outlets and further including means for pneumatically sealing the seal assembly to the selected outlet; and

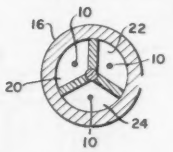
a switching mechanism coupled to the main housing and operable to move the seal assembly out of engagement with one of the outlets and into engagement with another of the outlets.

3,868,072

ORBITAL ENGINE

Charles P. Fogarty, Box 254, Commack, N.Y. 11725

Continuation-in-part of Ser. No. 664,463, Aug. 30, 1967, abandoned. This application Sept. 28, 1971, Ser. No. 184,414
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS **30 Claims**



1. A method of driving an engine in space, comprising:

providing an artificial system in a space environment including a smaller mass associated by a tether to a larger mass; revolving said smaller mass about said larger mass;

causing the angular momentum of the revolving smaller mass to rotate the larger mass; and

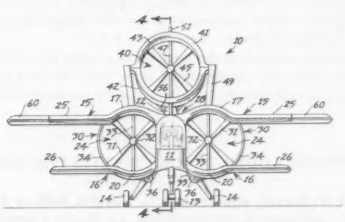
the rotational energy of said rotating larger mass as a driving means of said system functioning as said engine.

3,868,073

PROPULSION SYSTEM FOR AIRCRAFT

Myron L. King, c/o Lyzon Art Galleries, 411 Thompson Ln., Nashville, Tenn. 37211

Filed Jan. 30, 1974, Ser. No. 438,025
Int. Cl. B64c *3/10*
U.S. Cl. 244—34 A **9 Claims**



1. A propulsion system for aircraft comprising:

a. a fuselage having a front-to-rear longitudinal axis,

b. an upper air foil fixed to said fuselage and having a leading edge and a trailing edge,

c. said upper air foil extending arcuately, convex upward, transversely of said fuselage,

d. a lower air foil fixed to said fuselage, having a leading edge and a trailing edge, and spaced substantially vertically below said upper air foil,

e. said lower air foil extending arcuately, convex downward, transversely of said fuselage, so that the opposed, spaced, concave surfaces of said air foils generally form an air duct,

f. a rotary propeller having blade tips,

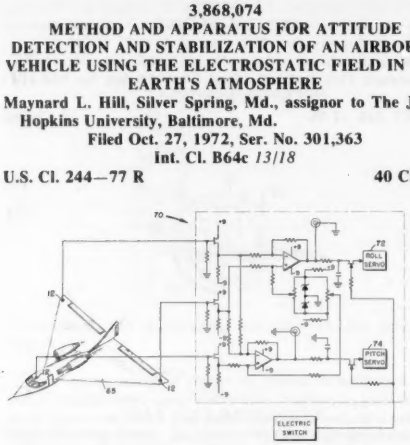
g. means rotatably mounting said propeller behind said duct and adjacent the trailing edges of said air foils so that the rotary path of said propeller tips is above the trailing edge of said upper air foil, but not below the trailing edge of said lower air foil, and

h. means for driving said propeller.

3,868,074
METHOD AND APPARATUS FOR ATTITUDE DETECTION AND STABILIZATION OF AN AIRBORNE VEHICLE USING THE ELECTROSTATIC FIELD IN THE EARTH'S ATMOSPHERE

Maynard L. Hill, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Oct. 27, 1972, Ser. No. 301,363
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 R **40 Claims**



5. A method for stabilization of at least one axis of an airborne vehicle operating in the static electric field existing in the earth's atmosphere, comprising the steps of:

defining an equipotential line existing in the static electric field present in the earth's atmosphere; and,

aligning the axis of the airborne vehicle with the equipotential line.

9. Apparatus for stabilization about at least one axis of an airborne vehicle operating in the electric field existing in the earth's atmosphere, comprising:

at least two static voltage sensing probes disposed on the airborne vehicle;

means electrically connected to the probes for receiving the potentials sensed by said probes and for producing an output signal proportional to the difference in sensed potential between the probes; and,

means for adjusting the position of at least one of the probes to cause the output signal to be zero, the line joining the probes thereby being aligned along an equipotential line.

3,868,075
JOINTLESS CODED TRACK CIRCUITS FOR RAILROAD SIGNAL SYSTEMS

Frank V. Blazek, and Thomas C. Vaughn, both of Allegheny, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation-in-part of Ser. No. 276,066, July 28, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 398,250
Int. Cl. B61l *3/10*
U.S. Cl. 246—34 CT **12 Claims**

1. A track circuit arrangement for a stretch of railroad track having electrically continuous rails, comprising in combination,

a. a low alternating current impedance cross bond connected across the rails at selected locations for dividing said stretch into a series of track sections,

b. a track current transmitter means at each location coupled to the corresponding cross bond and operable for supplying track current to the section in each direction from the associated bond,

1. each section current having a different preselected frequency and different from the preselected frequencies of a prefixed number of successive sections in each direction from that particular location,

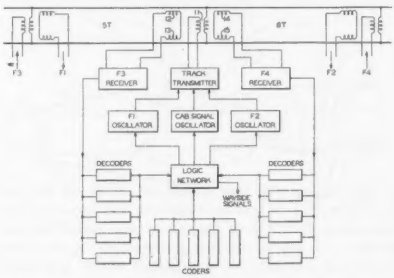
c. a frequency determining means at each location coupled to the associated transmitter means for establishing the preselected frequency of the track current supplied to each section adjoining that location,

d. a separate tuned track receiver coupled to the rails on each side of the cross bond connections at each location and responsive only to track current from the transmitter means at the other end of the corresponding section for producing an output signal,

e. a single logic network means at each location connected to receive the output signal of each track receiver and responsive thereto for registering a nonoccupied indication of the corresponding section when the signal is present and an occupied indication when the signal is absent,

f. a plurality of traffic condition signal generators at each location, each producing a distinct signal representing a predetermined advance traffic condition along the stretch of track, and

g. a plurality of decoder units, one for each advance trafffic condition signal, associated at each location with each track receiver and coupled to said logic network means,



h. said signal generators selectively coupled by said logic network means to said frequency determining means for separately modulating the track current supplied to each adjoining track section in accordance with the detected advance traffic condition in the corresponding direction along said stretch,

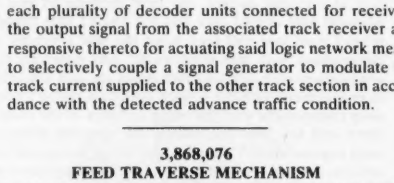
i. each track receiver further operable for demodulating the received track current to which it is responsive to produce a traffic condition output signal corresponding to the modulating signal selected at the next adjacent location in that direction,

j. each plurality of decoder units connected for receiving the output signal from the associated track receiver and responsive thereto for actuating said logic network means to selectively couple a signal generator to modulate the track current supplied to the other track section in accordance with the detected advance traffic condition.

3,868,076
FEED TRAVERSE MECHANISM

Michael A. Beagan, Jr., Harwood Ln., Claremont, N.H. 03743

Filed Oct. 17, 1973, Ser. No. 407,329
Int. Cl. E21c *11/00*; F16m *13/00*
U.S. Cl. 248—16 **8 Claims**



1. A drill mounting comprising: an elongated boom assembly; guide frame supporting and traversing means pivotally carried by said boom assembly adjacent one end portion thereof for limited rotation about a first pivot axis extending in a direction substantially normal to the longitudinal axis of said boom; said traversing means having a serial plurality of

link elements each pivotally connected to the adjacent link elements to form a closed polygon with the pivot axes of said link elements being located at the respective apexes of said polygon, being parallel to each other, and extending in a direction substantially normal to the longitudinal axis of said boom and said first pivot axis; an elongated drill guide frame assembly pivotally carried by at least one of said link elements for rotation about a second pivot axis; and selectively operable means pivotally carried by at least one of said link elements and cooperable with said traversing means to selectively move said second pivot axis generally transversely to either side of said longitudinal axis.

3,868,077

CONNECTOR FOR A LAMP HOLDER OF A LAMP STARTER HOLDER

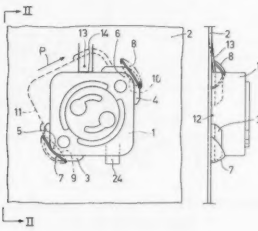
Cornelius Hendrikus Josephus Van Tiel, and Gerhardus Johannus Berns, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,125

Claims priority, application Netherlands, Oct. 11, 1972, 7213713

Int. Cl. G12b *9/00*

U.S. Cl. 248—27 **3 Claims**



1. A connector for a holder for a lamp or lamp starter comprising a plate having a resilient lug and only two holding lugs formed integrally from the plate by a force-through operation, each holding lug so arranged as to engage a respective projection on said holder when said holder is assembled to the plate, wherein said holding lugs are first and second holding lugs so disposed that said holder can be assembled to the plate only by inserting one projection under the first holding lug and then rotating said holder to an assembled position so as to insert another projection under the second holding lug, said resilient lug being so located as to be biased to a depressed position by said holder while a projection has been inserted only under the first holding lug and said resilient lug being in a locking position when said holder is in said assembled position, said holder being detachable by forcing said resilient lug to its depressed position, rotating said holder about said first holding lug in a reverse direction, and then removing the respective projection from under said first lug.

3,868,078

COLLAPSIBLE PROJECTION SCREEN STRUCTURE

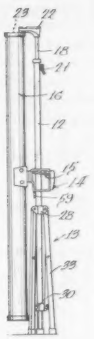
Robert W. Zinn, Addison, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.

Filed May 18, 1973, Ser. No. 361,854

Int. Cl. G03b *21/56*

U.S. Cl. 248—171 **15 Claims**

1. A projection screen structure, comprising,
   a. an elongate standard,
   b. a screen support adjustable along an intermediate portion of the standard,
   c. a screen casing mounted on the screen support,
   d. a rolled screen in the casing,
   e. a hanger on the upper end of the standard,
   f. means cooperating with the standard and the screen support for holding the support in adjusted positions on the standard,



   g. stop means on the standard normally engageable with the support for limiting downward movement of the support at a storage position on the standard, and
   h. means mounting the support on the standard for bypassing the stop means to selectively lower the support below the stop means.

3,868,079

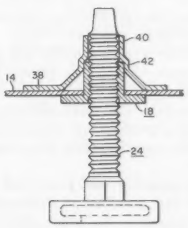
LEVELING FOOT ASSEMBLY FOR A LAUNDRY APPLIANCE

Leslie Johnson, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 9, 1973, Ser. No. 377,845

Int. Cl. A47b *91/06*

U.S. Cl. 248—188.4 **1 Claim**

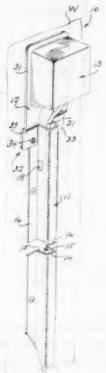


1. An adjustable leveling foot assembly for a laundry appliance having a housing including a bottom panel, said assembly comprising;
   a nut having a flanged head attached to said panel in facing engagement with the underside of said panel and an integral internally threaded stem extending upwardly through an appropriately sized aperture in said panel;
   a footbolt having a weight-bearing head and a threaded shank portion, said shank portion being threadably received within said stem for adjustable extension from said nut by turning said footbolt;
   sleeve means engaging the stem end of said nut adjacent said upper end, said sleeve having a flat flange area in engagement with said panel on the side opposite said flanged head of said nut, said flanged area extending along said panel a greater dimension than said head and said sleeve interferingly engaging the portion of said footbolt extending from said upper end of said nut to prevent vibrationally induced turning of said bolt.

3,868,080
PROTECTED TELEPHONE SERVICE INSTALLATION

John B. Olson, Milwaukee, Wis., assignor to Utility Products Co., Milwaukee, Wis.

Filed Nov. 2, 1973, Ser. No. 412,197
Int. Cl. H02g 3/02
U.S. Cl. 248—205 R 2 Claims



1. A mounting device for mounting a telephone circuit protector at an exterior wall of a building to which telephone service is to be supplied via a buried cable, characterized by:

A. an upright plate member having flat front and rear surfaces, and having a vertically elongated slot;

B. captive nuts slidably secured in said slot and providing for the reception of screws for mounting the circuit protector on the front surface of the plate member;

C. an elongated upright stake member having front and rear surfaces and a rearwardly opening groove therein which extends along the entire length of the stake member to receive that end portion of a service cable which is brought up out of the ground for connection to a circuit protector on the plate member.

said stake member having a lower end portion which is adapted to be driven into the ground closely adjacent to an exterior wall of a building with its groove facing the same, whereby the stake member can cooperate with said wall in protectively enclosing that portion of a service cable extending from the ground to the circuit breaker; and

D. means rigidly securing said plate and stake members together comprising an offset attaching portion on one of said members engaging the other thereof to locate the plate member in a plane forwardly of the rear surface of the stake member a distance such that said nuts will not interfere with positioning of the stake member closely adjacent to the exterior of a building wall in front of which the mounting device is to be located.

3,868,081
BRACKETS

David L. Morgan, 6, Church Row, Hampstead, London, N.W. 3, and Peter Sampson, 20, Kingswood Rd., London, S.W. 19, both of England

Filed Feb. 23, 1973, Ser. No. 335,052
Claims priority, application Great Britain, Feb. 28, 1972, 9011/72
Int. Cl. A47b 47/00, 3/06; A47g 29/02
U.S. Cl. 248—245 9 Claims

1. A bracket for supporting a shelf or the like from an upright cylindrical support, said bracket comprising an elongate arm upon which a shelf or the like is supported horizontally in use of the bracket and a clamping head arranged at one end of said arm for attaching the bracket to the said upright cylindrical support, wherein said clamping head comprises a part-cylindrical portion attached to said arm and adapted to lie against part of the circumference of the cylindrical support, a leaf spring member permanently having a natural curvature which is substantially the same as that of said part-cylindrical portion, means for permanently attaching one end of said leaf spring member to said part-cylindrical portion forming a substantially continuous internal cylindrical surface which lies against the surface of the cylindrical support in use of the bracket, a part-cylindrical member, means for permanently attaching the part-cylindrical member to the other end of said leaf spring member, said part-cylindrical member having a

curvature substantially the same as that of said part-cylindrical portion, the natural resilience of said spring strip and the length of the latter being such that when said part-cylindrical portion lies against part of the circumference of the cylindrical support the spring strip brings the part-cylindrical member into juxtaposition with another part of the circumference of said support while the spring strip itself lies against an intermediate part of the circumference of said support so that the head surrounds said support, said part-cylindrical member having a straight portion which lies adjacent part of said arm when the leaf spring member embraces the support, and securing means for releasably connecting said straight portion and said adjacent part of the arm to clamp the head to the support.

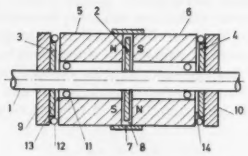
3,868,082
DEVICE IN A MICROTOME FOR DAMPING OF VIBRATIONS

Anton Soderqvist, Vallingby, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed July 16, 1974, Ser. No. 488,947
Claims priority, application Sweden, July 16, 1973, 7309095
Int. Cl. F16f 7/10; H02k 41/02; F16f 15/12
U.S. Cl. 248—358 R 2 Claims

1. Device in a microtome for damping of vibrations of the specimen arm of the microtome, characterized in that it comprises an axis, consisting of a non-magnetic material and rigidly connected to the specimen arm, said axis being provided with a flange, consisting of a material having low resistivity, and two U-magnetized toroid cores, embracing the axis and resiliently suspended in relation to the axis, said U-magnetized toroid cores being affixed relative to each other in order that

a constant air gap is at hand between said cores through which air gap the toroid cores are forcing a magnetic field, said U-

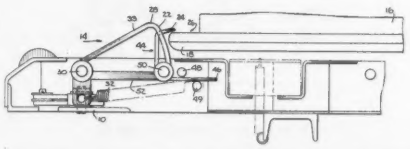


magnetized toroid cores being arranged in such a way that said flange is surrounded by said air gap.

3,868,083
TRAILER BED

Alan Titcombe, Broomfield, Colo., assignor to Irvin Industries, Inc., Greenwich, Conn.

Filed Oct. 26, 1973, Ser. No. 410,022
Int. Cl. B65j *1/22*
U.S. Cl. 105—366 B **4 Claims**



1. On the bed of a baggage cart, the container stop and hold down mechanism improvement comprising:

a first element rotatably mounted on said bed and having a first end position extending above the surface of said bed and a second end position entirely below the surface of said bed,

a spring connected between said element and said bed to bias said element into said first end position,

said first element having a shoulder extending up from said bed in a substantially vertical direction when said element is in said first end position,

a second element rotatably mounted on said first element and having a first end position extending above the surface of said bed and a second end position entirely below the surface of said bed,

said second element including a tongue portion positioned to extend over the lip of a container abutting against said shoulder when said first element and said second element are both in their said first end positions,

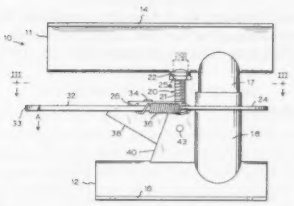
constraint means engaging said second element to force said second element into its said first end position when said first element is in its said first end position and to force said second element into its said second end position when said second element is in its said second position.

3,868,084
SWIVEL PEDESTAL FOR SEATS

Howard M. Quakenbush, Monona Village, Wis., assignor to Flexsteel Industries, Inc., Dubuque, Iowa

Filed July 20, 1973, Ser. No. 381,157
Int. Cl. A47c *1/00*; **F16m** *11/08*
U.S. Cl. 248—418 **5 Claims**

1. In a swivel pedestal for seats, base means, seat support means, means journalling said seat support means on said base means for rotation of said seat support means about a vertical axis, locking means for locking said seat support means against rotation relative to said base means and comprising a first element projecting downwardly from said seat support means, a second element supported for movement relative to said base means, spring means urging said second element into locking engagement with said first element, and an actuating arm connected to said second element and projecting generally radially outwardly with respect to said axis to an end portion, said end portion being movable downwardly to move said second element away from locking engagement with said first element to allow rotation of said seat support means, said second element being rigidly secured to an inner end portion of said actuating arm, and pivotal connection means between said arm and said base means, said pivotal connection means

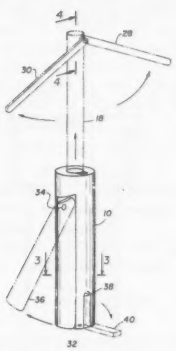


being arranged for moving said second element radially outwardly away from said vertical axis in response to downward movement of said outer end portion of said arm, said pivotal connection means comprising a pivotal member journalled on said base means for pivotal movement about a first horizontal axis spaced from said vertical axis and below said second element, and lever means connected to said actuating arm and journalled on said pivotal member for pivotal movement relative thereto about a second horizontal axis spaced downwardly from said first horizontal axis, said lever means including a portion engagable with said base means at a point below said second horizontal axis.

3,868,085
BOOK PAGE HOLDER

Arch N. Bentley, Fullerton, Calif., assignor to The Raymond Lee Organization, New York, N.Y.

Filed May 6, 1974, Ser. No. 466,951
Int. Cl. A47b *97/04*
U.S. Cl. 248—452 **3 Claims**

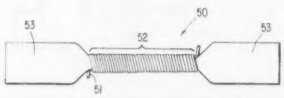


1. A book page holder comprising:

a vertical cylinder provided with first and second contiguous vertical bores which share a common vertical port extending along the common contiguous length;

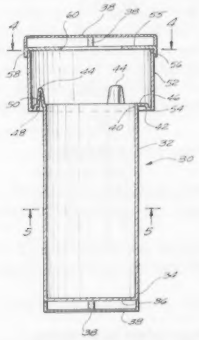
an elongated vertical member slidable in the first bore;
a pair of adjacent thin elongated arms having corresponding ends pivotally secured to the member adjacent its top ends, said arms when disposed vertically and parallel being slidable in the second bore, the arms being pivotable in vertical planes;
a first elongated support element pivotally secured at one end to the cylinder at a point intermediate the ends of the cylinder, the first element having a vertical position when not in use and being swung to a position extending outward and downward when in use, the first element being pivotable in vertical plane.

3,868,086
WALL HANGER
Robert Kanof Tendler, Buckridge Dr., Amherst, N.H. 03031
Continuation-in-part of Ser. No. 235,174, March 16, 1972, Pat. No. 3,788,558. This application Sept. 25, 1973, Ser. No. 400,662
Int. Cl. A47g *1/24*; A47f *7/14*
U.S. Cl. 248—467 **22 Claims**



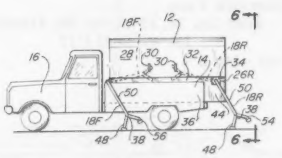
1. A wall hanger comprising: a strip of tape narrowed on itself in an elongated central region thereof to form a generally cylindrical structure, flexible means overlying said generally cylindrical structure for maintaining the cylindrical shape thereof and to facilitate centering said tape having generally flat portions on either side of said central region adapted to be adhesively affixed to a structure to be mounted on said wall, said central portion being free of said structure and adapted to be engaged at different points along the length thereof by a protrusion from said wall to facilitate the hanging of said structure and adjustment of said structure on said wall.

3,868,087
MOLD FOR FORMING DISPENSING CONTAINERS
Henry Rothschild, Cherry Hill, N.J., assignor to Caddy Corporation of America, Pitman, N.J.
Filed May 7, 1973, Ser. No. 357,934
Int. Cl. B29c *5/04*
U.S. Cl. 249—137 **8 Claims**



1. A mold for use in a rotational molding process comprising a hollow tubular mold member having first and second longitudinally spaced end portions, said first end portion of the mold member being closed and said second end portion being open and including a peripheral flange extending outwardly from said tubular member, said flange having a plurality of independent peripherally spaced hollow projections extending outwardly therefrom and away from said open end along lines extending generally parallel to the longitudinal axis of said tubular member; said hollow projections being open to the atmosphere through said flange on the side thereof opposite the projections whereby the interior of said projections open towards the closed end of said tubular member on the outside thereof.

3,868,088
APPARATUS FOR MOUNTING CAMPER BODIES AND THE LIKE
Charles F. Reeves, 1200 S. Monaco Pky., Denver, Colo. 80222
Filed Feb. 15, 1974, Ser. No. 442,774
Int. Cl. B66f *7/26*
U.S. Cl. 254—49 **1 Claim**

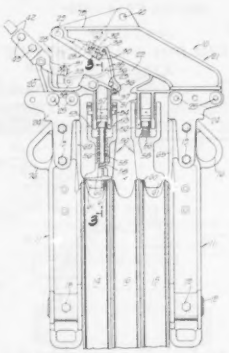


1. The tilt-up jack assembly which comprises: four rigid stanchions each including a stem portion terminating at its lower end in divergent arms defining a bifurcated foot, and bracket means connectable to the upper end of the stem portion of each stanchion and to the load to be supported upon the latter, said bracket means when so connected being operative to mount said stanchions for relative independent pendulum-type pivotal movement in a vertically disposed plane extending alongside said load, the feet of the stanchions cooperating with one another upon placement of the stem portions thereof in an upright position to maintain said load in a stable freestanding condition, and the stem portions of each stanchion including an outer tubular element and an inner tubular element telescoped into the latter, a fixed abutment on the upper end of the inner tubular element, a movable abutment within the upper end of the outer tubular element operative upon actuation to limit and vary the penetration of the inner tubular element therein, and means comprising a compression spring interposed between the fixed and movable elements operative to form a shock-absorbing coupling therebetween.

3,868,089
HELICOPTER THREADABLE STRINGING BLOCK ASSEMBLY FOR POWER CONDUCTORS
Keith E. Lindsey, 110 El Nido, Apt. 29, and L. E. Lindsey, 2262 E. Mountain Ave., both of Pasadena, Calif. 91107
Continuation-in-part of Ser. No. 282,430, Aug. 21, 1972,. This application Sept. 20, 1973, Ser. No. 398,952
Int. Cl. B66d *1/36*
U.S. Cl. 254—134.3 PA **40 Claims**

36. A stringing block assembly having a hauling line threading passage adapted to be threaded by aircraft, gate means movably supported crosswise of said threading passage and normally closed to prevent escape therepast of a hauling line previously threaded through said passage, means for normally biasing said gate means to the closed position thereof, and holding means for holding said gate means open and engage-

able by a hauling line passing along said threading passage effective to dislodge said holding means thereby permitting



said biasing means to close said gate means as an incident to the passing of the hauling line therepast.

3,868,090

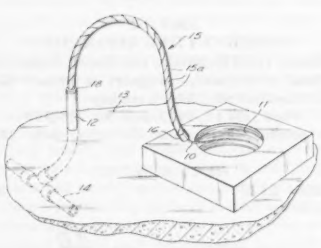
WIRE GUIDING ARRANGEMENT

Benjamin F. Peirce, Jr., 1040 S.W. 67th Ter., Plantation, Fla. 33317

Filed Feb. 19, 1974, Ser. No. 443,342

Int. Cl. E21c *29/16*

U.S. Cl. 254—134.3 R **2 Claims**



1. A line guide for feeding a wire or cable into a conduit having an open end of a predetermined inside diameter comprising:

an elongated preformed hollow, tubular guide member having successive helically wound longitudinally flat turns of insulating plastic preformed to normally abut endwise against one another in succession and form a tube, said guide member being manually bendable by the separation of its successive turns from abuting relationship with each other at the outside of the bend, and the pitch of said turns being greater than the outside diameter of said tube;

a retainer fixed around the outside of each end of said guide member to hold said turns together;

and a plug on the outside of said guide member near one end for snug reception in said open end of the conduit into which the wire or cable is to be fed.

3,868,091

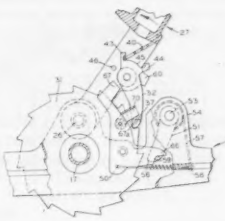
PORTABLE WINCH

David B. Hoffman, 2135 Haviland Rd., Columbus, Ohio 43220

Filed Mar. 29, 1974, Ser. No. 456,022

Int. Cl. A63b *61/04*

U.S. Cl. 254—164 **7 Claims**



1. A winch of the type described comprising a rotatable drum having ratchet means associated therewith, a lever oscillatable to actuate said ratchet means to rotate the drum, said ratchet means comprising a ratchet wheel fixed to the drum, a feed pawl carried by the lever, means for adjusting the feed pawl on the lever to an advancing position where it engages the teeth of the ratchet wheel so that oscillation of the lever will rotate the drum in a forward direction or to a reversing position where it is spaced from the ratchet teeth so that oscillation of the lever will not rotate the drum in a forward direction but will permit reversal thereof, a stop pawl engaging the teeth of the ratchet wheel to prevent reverse rotation of the drum as it is advanced in a forward direction, fixed cam means adjacent the path of movement of the lever for engaging the feed pawl upon swinging of the lever in a forward direction only when the feed pawl is set at reversing position to engage the feed pawl with the ratchet teeth to cause it to function as a stop pawl for the reversing movement of the drum, and a cam movably mounted adjacent the ratchet wheel and positively engaged by said feed pawl upon the camming thereof by said fixed cam upon further swinging of the lever in said forward direction to positively move the movable cam into engagement with the stop pawl to thereby release the stop pawl from the ratchet teeth to permit such reversing movement under control of the lever and positively engaged by the feed pawl upon moving of the lever in a reverse direction to thereby return it to its original position, said movable cam having fixed cam portions spaced in the direction of swinging of said lever with which the feed pawl engages respectively in its forward and reverse movement, and a cam portion adjustably mounted on said movable cam intermediate said fixed cam portions for movement between an inoperative position where it will not be engaged by said feed pawl and an operative position where it will be engaged by the feed pawl upon reverse movement of the lever.

3,868,092

CHEESE KETTLE OR EQUIVALENT

Roland Gabriel-Robez, Helsinki, Finland, assignor to MKT-tehtaat Oy, Helsinki, Finland

Filed Jan. 5, 1973, Ser. No. 321,256

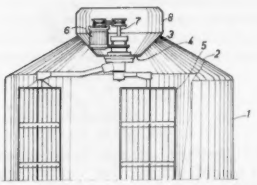
Claims priority, application Finland, Nov. 29, 1972, 3369/72

Int. Cl. B01f *7/30*

U.S. Cl. 259—120 **3 Claims**

1. An improvement in a cheese kettle or other equivalent upright enclosed tank comprising stirrers, an upwardly arranged conically shaped cover, drive means for the stirrers including a drive shaft passing through the cover and connected to said stirrers, wherein the improvement comprises that said cover includes a first truncated cone terminating in a mouth at its upper end and a second truncated cone tapering inwardly in the downward direction and having a bottom

plate, said second truncated cone connected to and extending downwardly from said mouth within said first truncated cone, said drive means mounted within said second truncated cone



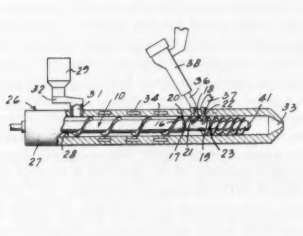
on said bottom plate, and said first truncated cone having a height approximately twice that of said second truncated cone and a larger apex angle than said second truncated cone.

3,868,093

MIXING SCREW AND USE THEREOF

Nickolas N. Sokolow, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed July 31, 1973, Ser. No. 384,235
Int. Cl. B29b *1/10*; B29f *3/02*
U.S. Cl. 259—191 **6 Claims**



1. A screw for an extruder comprising

A. an elongated cylindrical shank having, in axially adjacent relationship, a mid-section, and a terminal section,

B. said mid-section and said terminal section having an integral, primary, radially projecting, continuous helical flight extending axially therealong,

C. said erminal section having a smaller diameter than said mid-section whereby when the screw is incorporated in an extruder barrel the extruder will be capable of accommodating a larger volume of material at the terminal section,

D. at least one additional integral, secondary, radially projecting, continuous helical flight on said shank in axially spaced relationship to said primary flight, such secondary flight(s) commencing in said mid-section adjacent said terminal section and extending axially along said terminal section,

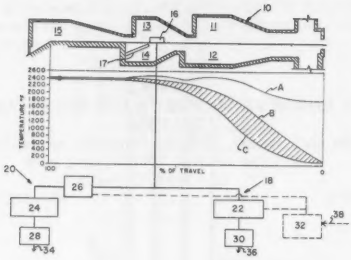
E. said primary and said secondary flights when in functional combination with a given extruder barrel being adapted to minimize cross flow between axially adjacent flights, and being further adapted to mix to some predetermined extent within channels between axially adjacent such flights, of an extrudate being moved between said barrel and said shank by such flights.

3,868,094

FURNACE CONTROL SYSTEMS

James E. Hovis, Jefferson Township, Allegheny County, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed June 15, 1973, Ser. No. 370,288
Int. Cl. C21d *1/00*
U.S. Cl. 266—5 T **3 Claims**



1. In a process for hot rolling workpieces in a rolling mill and controlling the zone temperature of a multiple zone metallurgical reheating furnace in which there are top and bottom zones and in which workpieces pass through the furnace intermediate the top and bottom zones prior to rolling, the improvement comprising utilizing a direct workpiece temperature measurement as the sole primary control by:

A. directly measuring the surface temperature of the workpiece in one of the top or bottom zones;

B. simultaneously transmitting a signal from the direct workpiece measurement to a top zone controller and to a bottom zone controller, each of which has a desired preset temperature; and

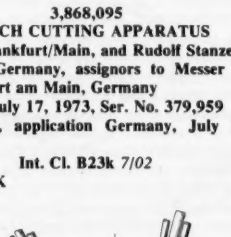
C. actuating a top zone motor and a bottom zone motor through the respective top and bottom zone controllers so as to drive furnace burners to maintain the desired preset temperatures.

3,868,095

TORCH CUTTING APPARATUS

Helmut Bauer, Frankfurt/Main, and Rudolf Stanzel, Ranbenberg, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed July 17, 1973, Ser. No. 379,959
Claims priority, application Germany, July 27, 1972, 2236821
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 K **8 Claims**

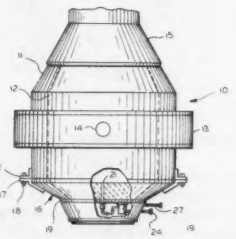


1. In a torch cutting apparatus, the combination of at least two cutting burner means including each a cutting nozzle device, and means for supporting and mounting said cutting

nozzle, devices at an angle with respect to each other and with respect to an upper surface of a workpiece and thereby adapting said cutting nozzle devices for bevel cutting an edge of said workpiece, wherein said supporting means comprises a nozzle block including at least two receiving bores arranged at a fixed predetermined angle in said nozzle block.

3,868,096
TUYERE SUPPORT MEANS FOR METALLURGICAL VESSELS

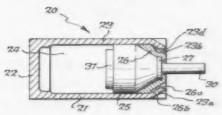
Eberhard G. Schempp, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed June 21, 1973, Ser. No. 372,329
Int. Cl. C21c *5/48*
U.S. Cl. 266—35 **1 Claim**



1. A refractory lined metallurgical vessel having at least one tuyere means for conducting fluidic materials into said vessel, said tuyere means comprising a first pipe and a second pipe extending through said first pipe and in spaced relationship therewith, said pipes extending from the exterior to the interior of said vessel, said first pipe having first flange means extending therefrom in proximity with said vessel and second flange means extending therefrom more remote from said vessel, tuyere support means fastened to said vessel and having an aperture through which said first pipe means extend and having radially extending flange means adjacent said first flange means on said first pipe, said second pipe having flange means adjacent said second flange means on said first pipe, clamping means for respectively clamping said first flange means to said tuyere support flange means and said second flange means on said first pipe to said flange means on said second pipe, said clamping means comprising arcuate members having means for engaging each other at corresponding ends, means at corresponding opposed ends of said members for selectively forcing said members toward each other, said members having a base for surrounding the periphery of said flange means and axially spaced apart oppositely divergent radially inwardly extending surfaces to enable engaging only the peripheral edges of adjacent flange means to wedge said adjacent means toward each other, means coupled with said first pipe for conducting fluidic material to the space between said first and second pipes and feed pipe means coupled with said second pipe for conducting fluidic material into it, said feed pipe means comprising flange means adjacent said flange means on said second pipe, one of said clamping means simultaneously engaging said second flange means on said first pipe, said flange means on said second pipe and said flange means on said feed pipe, and means for providing access to the interior of said second tuyere pipe, said last named means comprising a tubular member mounted on said feed pipe means and providing an opening that is substantially aligned with the interior of said second tuyere pipe, apertured flange means on said tubular member and having axially spaced apart surfaces in substantial parallelism with each other and extending radially from said tubular member, enclosure plate means having a surface for interfacing with one of said surfaces on the tubular member flange means and another surface in parallelism therewith, all of said parallel surfaces lying in planes that are perpendicular to the axis of said tubular member, and additional clamping means for pressing said last named flange means and the interfacing surface of said closure plate toward each other, said clamping means including pivotally connected arcuate members which in cross section comprise a base for surrounding the peripheries of said tubular member flange means and said another surface and oppositely divergent radially inwardly extending surfaces for wedging said flange means and said another surface toward each other, and means clamping said arcuate members together.

3,868,097
LIQUID SPRING

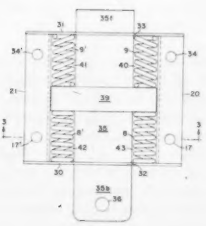
Paul Hollis Taylor, 38 E. River Rd., Grand Island, N.Y. 14072
Filed Sept. 25, 1968, Ser. No. 763,495The portion of the term of this patent subsequent to Apr. 25, 1990, has been disclaimed.
Int. Cl. F16f *9/36*
U.S. Cl. 267—124 **9 Claims**



1. In a shock absorber having a housing, a piston means slidably disposed within said housing, seal means for said housing and piston means and end closure means associated with said piston, housing and seal means, the improvement comprising means for restraining longitudinal movement between said housing and said end closure means including a formed crimped section acting as a reinforced structure for said housing and a reduced section on said end closure means wherein the reinforced structure acts as a lever against the reduced section to prevent relative longitudinal movement of said housing and closure means.

3,868,098
SHOCK ABSORBING TRAILER HITCH

Harold B. Coombs, 510 S. Sixth St., Kenedy, Tex. 78119
Filed Oct. 2, 1973, Ser. No. 402,784
Int. Cl. F16g *7/10*
U.S. Cl. 267—138 **8 Claims**



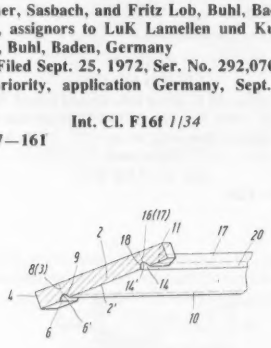
1. A trailer hitch comprising:
a substantially closed housing consisting of a closed bottom wall and opposite side walls having opposite end walls, said end walls having aligned openings therein;
a tongue axially extending through said aligned openings and reciprocable therein;
a cross member secured to said tongue intermediate said end walls;

resilient means extending axially between said cross member and said end walls whereby loads imposed at said tongue are dampened; and said housing having a closed cover plate removably secured thereto.

3,868,099
ANNULARLY RESILIENT, CONICALLY SHAPED COMPONENT

Paul Maucher, Sasbach, and Fritz Lob, Buhl, Baden, both of Germany, assignors to LuK Lamellen und Kupplungsbau G.m.b.H., Buhl, Baden, Germany

Filed Sept. 25, 1972, Ser. No. 292,070
Claims priority, application Germany, Sept. 25, 1971, 2148043
Int. Cl. F16f *1/34*
U.S. Cl. 267—161 **15 Claims**

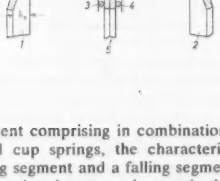


1. An annular resilient component comprising an annular body member having an inner and an outer wall surface of conical configuration and an annular inner and outer rim, and tab means extending from at least one of said rims of said body member, said tab means and said body member defining therebetween a transitional region having a conical inner wall surface portion wherein a chamfer extending transversely to said tab means is formed, said one of said rims defining part of said chamfer.

3,868,100
SPRING ELEMENT

Paul Maucher, Sasbach, Germany, assignor to Luk Lumellen und Kupplungsbau GmbH, Buhl/Baden, Germany

Filed June 20, 1973, Ser. No. 371,761
Claims priority, application Germany, June 24, 1972, 2231035
Int. Cl. F16f *1/34*
U.S. Cl. 267—162 **3 Claims**

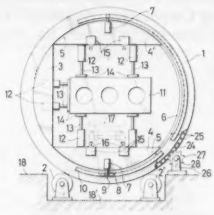


1. Spring element comprising in combination at least two conically formed cup springs, the characteristic curve of which has a rising segment and a falling segment, and a pair of seat means engaging the cup springs on both sides thereof at the same diameter for clamping said cup springs together at least substantially parallel to each other and with oppositely extending conicity, said cup springs being tippable together and in substantially parallel relationship with each other in two contrary directions about said pair of seat means.

3,868,101
WELDING POSITIONER

Terumichi Nozaki; Hideo Kobayashi; Sigeyuki Ohno, and Yu Imaoka, all of Okayama, Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Chuoku, Tokyo, Japan

Filed Aug. 8, 1973, Ser. No. 386,581
Claims priority, application Japan, Aug. 10, 1972, 47-80569
Int. Cl. B23k *37/04*; **B25b** *1/20, 1/22*
U.S. Cl. 269—25 **3 Claims**



1. A welding positioner for clamping an object to be welded, comprising:

a pair of rings, and rollers mounting said rings for rotation;

a stationary supporting bed secured to each ring;

movable supporting beds in each of said rings

hydraulic cylinder means provided on each movable supporting bed engageable with said ring to secure said each movable supporting bed to said ring;

additional hydraulic cylinder means provided on each supporting bed for clamping the object to be welded;

rails mounted on each movable supporting beds in said two rings, and adapted to receive a carriage carrying said object and to transfer said carriage to and from other rails positioned adjacent said rings;

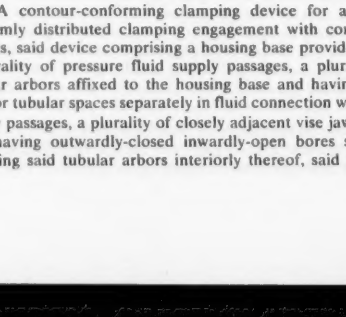
lifting means adjacent said rings adapted to engage said bed-supported rails for removing said movable supporting beds from contact with said rings; and

means for rotating said rings.

3,868,102
CONTOUR-CONFORMING CLAMPING DEVICE

Maxwell Pevar, 551 Shoemaker Rd., Elkins Park, Pa. 19117

Continuation-in-part of Ser. No. 237,111, April 27, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,710
Int. Cl. B23q *3/00*
U.S. Cl. 269—26 **10 Claims**



1. A contour-conforming clamping device for applying uniformly distributed clamping engagement with contoured objects, said device comprising a housing base provided with a plurality of pressure fluid supply passages, a plurality of tubular arbors affixed to the housing base and having their interior tubular spaces separately in fluid connection with said supply passages, a plurality of closely adjacent vise jaw members having outwardly-closed inwardly-open bores slidably receiving said tubular arbors interiorly thereof, said tubular

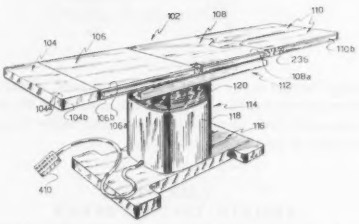
arbors and the bores of said jaw members having sealing means therebetween, and openings in the arbors beyond said sealing means for supplying fluid within the bores of said vise jaw members in chambers of variable length between the ends of said arbors and the ends of said bores to urge the jaw members outward, and means for retaining said vise jaw members in sliding operative position on said tubular arbors.

3,868,103

SURGICAL AND EXAMINATION TABLE STRUCTURE

Jacques Pageot, Laval, Quebec; Yvon Roy, Saint Leonard, Quebec, and Cesar Purkhardt, Ste-Foy, Quebec, all of Canada, assignors to Millet Roux & Cie., Ltee., Laval, Quebec, Canada

Filed Apr. 24, 1973, Ser. No. 354,111
Int. Cl. A61g *13/00*
U.S. Cl. 269—325 **13 Claims**



1. A surgical and examination table structure capable of longitudinal displacement in opposite directions comprising: a base; vertical supporting frame means fixed at one end thereof to said base; carrier means slidably mounted to said supporting frame means at the other end thereof; platform means mounted to said carrier means for supporting a patient and including a head panel, a back panel, a trunk panel connected to said carrier means along the side edges of said trunk panel and at least one leg panel, said panels being serially connected; hydraulic drive means including at least one hydraulic cylinder fixedly mounted on the vertical supporting frame means at said other end thereof and having a piston member connected to said carrier means for slidably displacing in the longitudinal direction said carrier means relative to said supporting frame means; the longitudinal displacement of the carrier means being such that all points on the platform means have at one time or another a vertical axis which clears the vertical supporting frame means thereby permitting an examination of a patient positioned on said platform means without moving the patient during the examination and tilting means in said carrier means for pivotably moving said platform means relative to said carrier means.

3,868,104

CONTACTLESS FLUID SEAL

Robert E. Hunt, Andover; John Delahanty, Boston, and Bruce M. Lane, Bedford, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

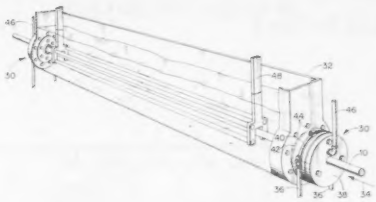
Filed July 26, 1973, Ser. No. 382,684
Int. Cl. F16k *41/00;* **F16j** *15/14*
U.S. Cl. 277—30 **9 Claims**

1. A liquid seal for preventing liquid in a tank from flowing out of said tank wherein an elongate member is moved through at least one wall of said tank, without contact between said member and said wall and said seal structure, said liquid seal comprising:

diverging venturi means adapted for mounting to a wall of said tank and having a larger end directly communicating with the inside of said tank and a smaller end for receiving a liquid and said elongate member for movement into said tank.

means for applying a liquid under pressure to said venturi means;

means for directing said liquid under pressure to said venturi means and including nozzle means coupled to the



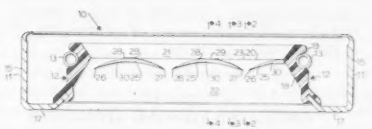
smaller end of said venturi means and through which said liquid under pressure is applied to said venturi means such that said liquid is caused to flow substantially in a direction from the smaller to the larger end of said venturi means and directly into said tank to provide venturi action and thereby prevent liquid from flowing along said elongate member out of said tank.

3,868,105

BIDIRECTIONAL HYDRODYNAMIC SHAFT SEAL

Gustavus A. Bentley, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Oct. 10, 1972, Ser. No. 296,077
Int. Cl. F16j *15/32*
U.S. Cl. 277—134 **5 Claims**



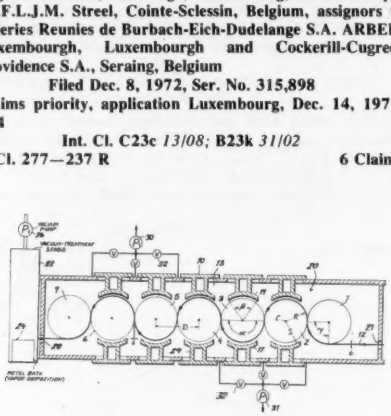
1. A bidirectional hydrodynamic shaft seal of the type having a rigid bore-contacting case and an elastomeric sealing element with a sealing lip wherein two frustoconical surfaces converge to a circular lip edge for providing a static rotary seal with a rotating shaft, said lip having an air side and an oil side, characterized by

the frustoconical air side of said lip having a plurality of crescent-shaped projections, the inner radial surface of each said crescent-shaped projection forming a cylindrical segment having the same radius as said lip edge, said surface segment converging axially toward said lip edge from both horns of the crescent and meeting said lip edge tangentially from both directions, said crescent surface when the seal is in contact with a shaft providing a footprint that, where it meets the lip, is axially wider that is the footprint of said lip edge during actual running conditions, the two points of convergence being apart from each other by a distance substantially greater than the width of said lip edge during actual running conditions.

3,868,106
VACUUM CHAMBER SEAL

George H. Donckel, Dudelange, Luxembourg, and Dominique Th.F.L.J.M. Streel, Cointe-Sclessin, Belgium, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourgh, Luxembourgh and Cockerill-Cugree-Providence S.A., Seraing, Belgium

Filed Dec. 8, 1972, Ser. No. 315,898
Claims priority, application Luxembourg, Dec. 14, 1971, 64454
Int. Cl. C23c *13/08*; B23k *31/02*
U.S. Cl. 277—237 R 6 Claims



1. A gate for a metal-strip treatment chamber maintained at a particular non-ambient pressure, comprising

a housing defining a gate chamber communicating with said treatment chamber;

at least three guide rolls all having their axes in a common plane mounted in said gate chamber for rotation and spaced apart by a distance of the order of the thickness of a metal strip to be processed in said treatment chamber, said metal strip passing along alternate sides of said rolls and extending therefrom into said treatment chamber, said strip alternatingly overshooting and undershooting said guide rolls of said array and contacting each guide roll of said array over an arc of substantially 180°; and

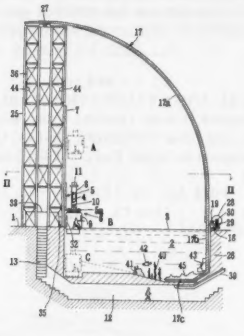
respective shoes juxtaposed with each of said guide rolls at diametrically opposite sides thereof and having arcuate faces closely spaced from said guide rolls and subdividing said chamber into a plurality of compartments, each of said shoes subtending an arc of substantially 90° to 120° of the respective guide roll.

3,868,107
SIMULATED VIEWING APPARATUS

Taketoshi Ichida, 11, 3-chome Oogimachi, Chikusa-ku, Nagoya, Japan

Filed Feb. 26, 1973, Ser. No. 335,886
Claims priority, application Japan, Feb. 28, 1972, 47-20415
Int. Cl. A63g *31/16*
U.S. Cl. 272—18 1 Claim

1. A simulated viewing apparatus comprising means defining a circular pool, said pool containing water therein, a tower arranged at the center of said pool, a semi-spherical dome disposed over said circular pool, annular guide means supporting said dome over said pool, supporting wheels mounted on the exterior of said dome and rotatable in said annular guide means, motor means operatively connected to at least one of said supporting wheels for driving the latter to thereby effect rotation of said dome relative to said pool, a lift means movable vertically along said tower, a horizontal shaft mounted on said lift means, a capsule, means for suspending said capsule from said horizontal shaft, supply and exhaust pipe means between the interior and exterior of said capsule, said supply and exhaust pipe means having a flexible tube portion, means for maintaining an upper portion of said supply and exhaust pipe means above the surface of the water is said pool, said dome having means thereon below the level of the water in the pool providing a three-dimensional effect and means above the level of the water in the pool providing a cinematographic panorama effect, pump means for circulating water in said pool, and movable resistant and adjusting plate means for



effecting changes in the water flow in said pool, whereby real events are simulated to a viewer in the capsule as the latter is moved up and down to positions above and below the surface of the water in said pool.

3,868,108
ATHLETIC TRAINING DEVICE

Robert L. Kirchner, 544 Kling Dr., Dayton, Ohio 45419

Filed Dec. 4, 1972, Ser. No. 311,944
Int. Cl. A63b *71/02*
U.S. Cl. 273—1.5 A 8 Claims

1. Athletic training device for training athletes to become accustomed to their field of view being partially obstructed comprising sight obstructing means having non-transparent portions, said sight obstructing means comprising a representation of a hand with spread apart fingers, and mounting means for removably supporting said sight obstructing means on the head of a user with said non-transparent portions in the field of view of the user's eyes.

3,868,109
GOLFER'S PRACTICE MAT

Joe J. Fowler, 2961 Castle Dr., San Jose, Calif. 95125

Filed June 6, 1973, Ser. No. 367,635
Int. Cl. A63b *69/36*
U.S. Cl. 273—187 A 3 Claims

1. A golf swing practice mat upon which a golfer may stand in a golf club swinging stance, said mat comprising:

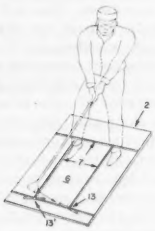
a unitary base of generally rectangular shape and uniform thickness, and having a planar top surface, said base being defined by first and second parallel ends and first and second parallel sides;

a first guide slot recessed in said planar top surface and extending transversely across said base adjacent said first

end, and a second guide slot recessed in said planar top surface and extending longitudinally of said base adjacent said first side from a first interception with said first guide slot, said first and second guide slots prescribing a first stance guide whereby a golfer may stand on said mat at a position dictated by said first interception of said first and second slots;

a third guide slot recessed in said planar top surface and extending transversely across said base adjacent said second end, said second guide slot terminating at a second interception with said third guide slot, said third guide slot prescribing a line of flight indicator and defining the intended line of flight of a ball struck by a golf club swung by a golfer standing on said base at said position dictated by said first interception;

a fourth guide slot recessed in said planar top to a depth greater than said first, second and third slots, said fourth guide slot being angularly disposed with respect to said



second and third slots, intersecting said second and third slots at said second interception, and extending on opposite sides of said third slot and prescribing a swing path indicator for showing the proper swing path of a golf club head to drive a golf ball in the direction indicated by said line of flight indicator;

a first aperture in said base, an upwardly extending ball support in said aperture, said first aperture being located at said second interception; and

upwardly extending integral cleats in said fourth guide slot, the thickness of said cleats being such that the upper surfaces thereof are positioned below said planar top surface of said mat at a depth substantially equal to the depth of said first, second and third slots, said cleats further being of a color contrasting from that of the remainder of said mat whereby said cleats serve to visually differentiate said fourth guide slot from said first, second and third guide slots.

3,868,110

TENNIS RACKET GRIP

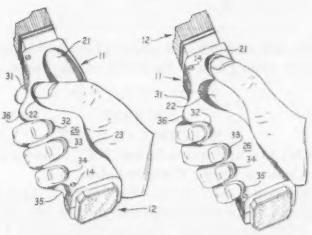
Bill J. Jones, 1911 Hannibal Dr., Lafayette, Calif. 94549

Filed Nov. 7, 1972, Ser. No. 304,348

Int. Cl. A63b *49/08*

U.S. Cl. 273—75 **3 Claims**

1. As a novel article of manufacture, a tennis training aid comprising the combination of a tennis racket and an elongated hollow grip therefor, having a central opening adapted to enclose the tennis racket handle, said opening being defined by a pair of wide sides and a pair of narrow sides; and means for detachably securing said grip to said handle, said grip being provided with indentations for positioning the four fingers and thumb of a user's hand in either a forehand stroke position or a backhand stroke position, said indentations including: a first thumb indentation adapted to locate said user's thumb along one of said wide sides when said user's hand is in a backhand stroke position; a second thumb indentation adapted to locate said user's thumb across said one wide side when said user's hand is in a forehand stroke position, said first and second thumb indentations overlapping at a location intermediate the length of said first wide side; an upper finger indentation adapted to locate the index finger of said user's hand in a forehand stroke position, said upper finger indentation being formed in the other of said wide sides in general alignment with said second thumb indentation; a lower finger indentation adapted to locate the little finger of said user's hand across the other of said wide sides in a backhand stroke position; a plurality of three finger indentations extending across the other of said wide sides and adapted for positioning various of said user's fingers around said grip, said indentations defining the location of the index, middle and



ring fingers when said user's hand is in a forehand stroke position and further defining the location of said middle, ring and little fingers when said user's hand is in the backhand stroke position; a heel indentation extending rearwardly of the handle from the joinder of said first and second thumb indentations and adapted to locate the heel of said user's hand when in either said forehand or backhand stroke position; a protuberance extending longitudinally along said grip from adjacent said first thumb indentation with a decreasing width and increasing height to a juncture of said first thumb indentation and said heel indentation to fit between the user's thumb and index finger.

3,868,111

PLATFORM MINIATURE GOLF GAME

Edgar Allan Schuelke, 18 W. 775 72nd St., Downers Grove, Ill. 60515

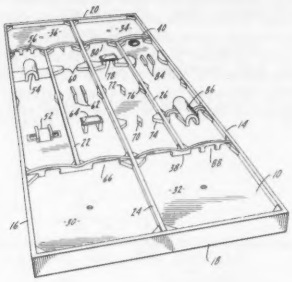
Filed Sept. 10, 1973, Ser. No. 395,644

Int. Cl. A63f *7/06*

U.S. Cl. 273—87 C **5 Claims**

1. A platform miniature golf game comprising a generally flat platform having side and end walls extending completely about said platform, a plurality of spaced apart longitudinally extending walls intermediate said side walls dividing said platform into a plurality of simulated fairways between said side walls and longitudinally extending walls, said fairways being separated from each other only by said longitudinally extending walls, additional transversely extending walls spaced from said end walls adjacent each end of said platform providing at least one green at each end of said fairways, a recessed cup in each said green, said transversely extending walls separating said greens from said fairways, and openings in said transversely extending walls providing passageways

from at least two of said fairways to each green at each end of said fairways, whereby during use of said game a ball may be



caused to pass through said openings from at least two of said fairways to each green at each end of said fairways.

3,868,112

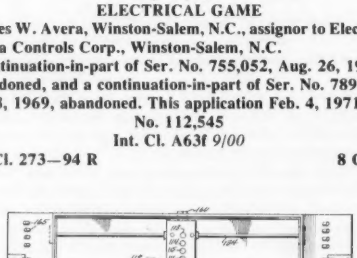
ELECTRICAL GAME

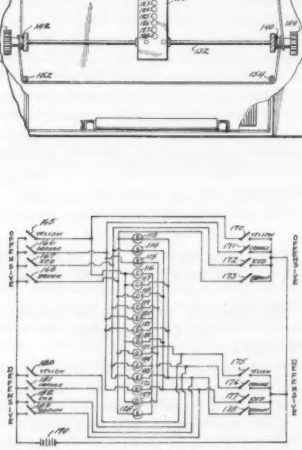
Charles W. Avera, Winston-Salem, N.C., assignor to Electronic Data Controls Corp., Winston-Salem, N.C.

Continuation-in-part of Ser. No. 755,052, Aug. 26, 1968, abandoned, and a continuation-in-part of Ser. No. 789,806, Jan. 8, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,545

Int. Cl. A63f *9/00*

U.S. Cl. 273—94 R **8 Claims**





1. A game comprising:

support means,

grid means mounted on said support means for representing a plurality of results of a plurality of acts on an athletic playing area and having a plurality of result areas each having indicia disclosing a result, the location of each said result area being defined by a first coordinate representing one of a plurality of alternative acts and by a second coordinate representing one of a plurality of alternative results to said one act,

a plurality of light sources including a plurality of bulbs,

means mounting all of said bulbs in a straight line beneath said grid means, said mounting means being movably oriented beneath said grid means so that said mounting means and said sources are selectively movable along a path such that said sources pass beneath each of said result areas having said second coordinate so that an act can be chosen by moving all of said light producing sources beneath the result areas having the first coordinate representing that act, said mounting means including a frame for holding said bulbs, first and second substantially parallel fixed rods attached to said frame so that said frame can move along said rods with each bulb moving along a path roughly beneath said grid such that the result areas beneath which each said bulb move have the same second coordinate, first and second knobs connected to opposite ends of one of said rods for rotating that rod and each extending out of said housing for manual rotation, and a cord connected at both ends to opposite sides of said frame and looped about each of said knobs so that rotation of either of said knobs causes said frame to move along said robs, and

play result selection means connected to said plurality of light sources for causing, in response to manual operation, one of said light sources to produce light and cause the result area above it to appear different from the other result area so that the indicia on that result area indicate the result of the chosen art.

3,868,113

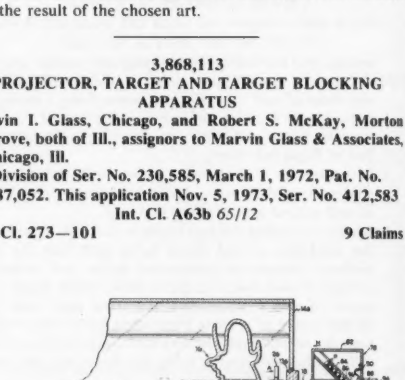
PROJECTOR, TARGET AND TARGET BLOCKING APPARATUS

Marvin I. Glass, Chicago, and Robert S. McKay, Morton Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Division of Ser. No. 230,585, March 1, 1972, Pat. No. 3,787,052. This application Nov. 5, 1973, Ser. No. 412,583

Int. Cl. A63b *65/12*

U.S. Cl. 273—101 **9 Claims**

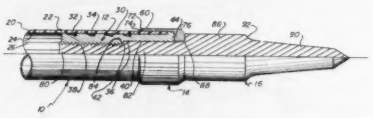


1. A skill type game comprising: a framework having two opposing launching areas, target means at each of said opposing launching areas, selectively operable launching devices at each launching area for propelling objects therefrom through the air toward the target means at the opposite launching area, and immobilizing means operatively associated with said target means to effectively block the propelling of objects from said launching devices in response to the respective target means in the same launching area being struck by one of said objects.

3,868,114
ARCHERY ARROW WITH SHAFT SUPPORTING ARROW HEAD ASSEMBLY

Norman A. Groner, Kalkaska, Mich., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Aug. 13, 1974, Ser. No. 496,946
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 B 5 Claims

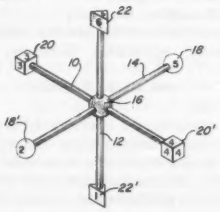


1. An archery arrow comprising:
an arrow shaft member having an end for mounting an arrow head;
a cylindrical chamber in said end of said arrow shaft member defined by a relatively thin cylindrical wall providing an outer cylindrical peripheral surface and an inner cylindrical peripheral surface terminated by a transverse end surface;
an arrow attachment member supportively mounted in said cylindrical chamber, an outer cylindrical surface on said attachment member in supportive abutting engagement with said inner cylindrical peripheral surface of said arrow shaft, a radially outwardly extending flange portion on one end of said attachment member, a first abutment side surface on said flange portion abuttingly engaging said transverse end surface of said arrow shaft, a second abutment side surface on said flange portion spaced axially outwardly of said first abutment side surface;
a sleeve member mounted on said end of said arrow shaft member, a cylindrical inner peripheral surface in supportive abutting engagement with said outer cylindrical peripheral surface of said arrow shaft member, a first radially extending side surface in abutting engagement with said second abutment side surface on said flange portion of said attachment member,
a second radially extending side surface on said sleeve member spaced axially outwardly of said first radially extending side surface; and
an arrow head member supportively mounted in said arrow attachment member, a radially extending abutment surface on said arrow head member abuttingly engaging said second radially extending side surface on said sleeve member and holding said sleeve member in fixed abutting relationship with said attachment member and said end portion of said shaft member.

3,868,115
DIE FOR USE IN PLAYING DICE GAMES

Owen J. Faiferlick, 1300 Fairfax, Denver, Colo. 80220

Filed Aug. 3, 1973, Ser. No. 385,544
Int. Cl. A63f 9/04
U.S. Cl. 273—146 1 Claim

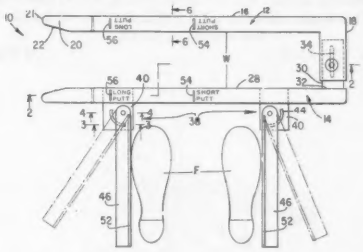


1. A die comprising three like elongate shaft members fixedly secured at their midpoints to each other in mutually perpendicular relationship, a block-like element at each end of each shaft with at least the block-like elements on any one shaft being of a different configuration than the block-like elements on any of the other two shafts, and each block-like element having distinctive indicia thereon different from the indicia on each of the other blocklike elements.

3,868,116
GOLF PRACTICE DEVICE

Douglas M. Ford, 3 Hartman Pl., Tuckahoe, N.Y. 10707, and Richard C. Schluter, 2420 Newton St., Vienna, Va. 22180

Filed Dec. 10, 1973, Ser. No. 423,231
Int. Cl. A63b 69/36
U.S. Cl. 273—186 C 10 Claims

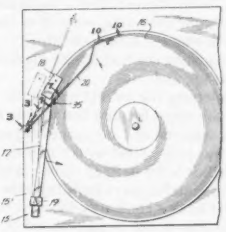


1. A golf practice device comprising a pair of members, each of said members having a longitudinally extending guide portion and a continuing inwardly turned end portion substantially at right angles to the longitudinal guide portion and at the rear end of said longitudinal guide portion, said guide portion and continuing end portion being of a generally inverted U-shaped configuration in cross-section with the bottom portion open and with one end portion of a smaller dimension than the other end portion so that the smaller dimensioned end portion telescopes into the other end portion, and means including fastening elements connected to said end portions for adjustably connecting said end portions so that said longitudinal guide portions are parallel to each other and are adjustably spaced to accommodate golf club heads of varying sizes.

3,868,117
RECORD CLEANING MECHANISM

Lawrence R. Kaplan, 56 Carver Ter., Yonkers, N.Y. 10710

Filed Aug. 10, 1973, Ser. No. 387,394
Int. Cl. G11b 3/58
U.S. Cl. 274—47 10 Claims



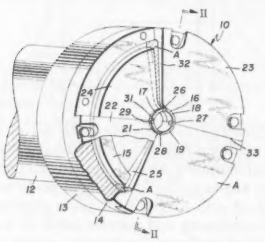
1. A record cleaning mechanism for use in combination with a record playing device and tonearm comprising a cleaning arm, means for mounting said cleaning arm on said record playing device for pivotal movement in planes parallel and perpendicular to the plane of rotation of a record when carried by the record playing device; record cleaning means carried by said cleaning arm, said mounting means and cleaning arm defining an assembly, cueing means carried by said

cleaning arm for positioning said record cleaning means in operative engagement with a record at the start of record play and retrieval means carried by said assembly between said mounting means and cueing means for returning said cleaning arm to a non-operative position when record play is terminated at any position of the tonearm after the start of record play by the return of said tonearm to a non-operative position.

3,868,118
MAGNETIC WORK HOLDER

Henry E. Hirvi, Paxton, and Leon J. Gloshinski, Northboro, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Continuation of Ser. No. 196,547, Nov. 8, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,448
Int. Cl. B23g *3/152*
U.S. Cl. 279—1 M **4 Claims**



1. A magnetic work holder for use in a machine tool having a rotatable spindle, comprising:

a. an annular electro-magnetic coil adapted to be mounted adjacent the spindle,

b. a first ring mounted on the coil to receive an electromagnetic field of one polarity,

c. a second ring mounted on the coil concentrically of the first ring to receive a field of the opposite polarity,

d. an annular lip located around the axis of the rings in a plane substantially spaced axially therefrom, the lip consisting of at least four parts subtending substantial angles, each part of the lip being closely associated with a hardened metal insert for engagement with the surface of a workpiece, and each insert being separated by a substantial gap from the next adjacent part of the lip other than the one with which it is associated,

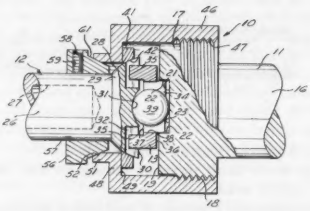
e. connectors joining the first ring to diametrically opposite parts of the lip, and

f. connectors joining the second ring to the remaining parts of the lip, the rings, lip, and connectors being formed of a magnetic material and the spaces between the connectors and rings being filled with a non-magnetic material, each connector being defined by two axial planes extending at a substantial angle radially from the axis of the rings and lips and by two conical surfaces having their vertices on the said axis in the neighborhood of the lip and the generatrices of the conical surfaces of a given connector lying at a substantial acute angle, the outer conical surface of the connectors joining the second ring to the lip subtends an angle somewhat less than that subtended by the inner conical surface of the connectors joining the first ring to the lip, the connectors and parts of the lip associated with the first ring being electrically insulated by the non-magnetic material from the connectors and parts of the lip associated with the second ring.

3,868,119
ADJUSTABLE UNIVERSAL COUPLING

Theodore E. Frisco, 7503 Dearborn Ave., Cleveland, Ohio 44102

Filed July 18, 1973, Ser. No. 380,509
Int. Cl. B23b *31/04*
U.S. Cl. 279—16 **1 Claim**



1. In a tool holder including a shank member and a holder member each defining an axis of rotation, a hollow housing axially threaded on the exterior of the shank and including a portion extending axially away from the shank member, said holder member axially terminating in the housing portion spaced from said shank member, coupler drive means within said housing, said coupler means including lug portions engageable with cooperating means on each of said members to transfer torque and to allow lateral misalignment between said members, said holder member having an elongated arcuate groove along the end face received within the housing, said coupler means having an elongated slotted portion transverse to the groove in said holder member, ball means received in said slotted portion and engageable with the arcuate groove in said holder member and an end face of said shank member to transmit axial forces and to allow angular and lateral misalignment between said members, circular retaining means within said housing, a radial shoulder including an inner radial surface on said housing opposing said circular retaining means, said housing adjustable retaining said holder against said ball means according to its axial position on said shank, a stop collar on the exterior of the holder, said stop collar including a conical outer surface concentric with the axis of the holder, said radial shoulder including a conical stop surface concentric with the axis of the shank, said stop collar being axially adjustable on said holder such that said collar aligns the axes of said members when it is set at a first position where it is uniformly circumferentially seated against said conical stop surface and it allows misalignment between said members in an increasing manner as its axial distance from said conical stop surface is increased, and locking means to retain said collar at a desired axial position on said holder.

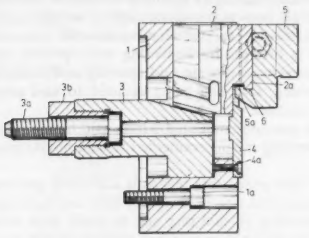
3,868,120
CHUCK

Hans Blattry, Meerbusch, and Johann Lindemann, Hilden, both of Germany, assignors to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany

Filed Oct. 2, 1973, Ser. No. 402,744
Claims priority, application Germany, Oct. 3, 1972, 2248403
Int. Cl. B23b *31/16*
U.S. Cl. 279—123 **15 Claims**

1. A chuck comprising a chuck body, a plurality of base raws radially movable in said body, means operatively connected to said jaws and movable in an axial direction of said chuck for radially adjusting said jaws, an auxillary jaw detachably received in a radial channel in each of said base jaws, hook-shaped holding means for holding the auxillary jaw on each of the base jaws and for preventing outward radial movement of said auxillary jaw relative to each of the base jaws,

spring means connected to each of the base jaws for clamping the auxillary jaw to each of the base jaws and for preventing



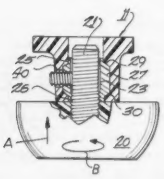
the auxillary jaw from undesired movement in the axial direction.

3,868,121

PLASTIC SKATE SOLE PLATE WITH ADJUSTABLE TOE-STOP MOUNT

Gordon K. Ware, St. Charles, Ill., assignor to Chicago Roller Skate Company, Cook, Ill.

Filed Dec. 21, 1973, Ser. No. 427,320
Int. Cl. A63c *17/14*
U.S. Cl. 280—11.2 **5 Claims**



1. A roller skate structure comprising a relatively soft sole plate, a toe stop projecting from the sole plate, a toe stop mounting pin rigidly connected to the toe stop, and a relatively hard bushing rigidly embedded in the sole plate and adapted to receive the toe stop mounting pin, the bushing including relatively small diameter end portions and a relatively large diameter mid-portion intermediate the end portion adapted to immobilize the bushing from movement within the sole plate, a set screw threadably engaging the bushing mid-portion and engaging the mounting pin to immoblize the mounting pin in the bushing, the sole plate being counterbored to prevent contact between the set screw and the adjacent sole plate material and thereby prohibit transmission of force from the set screw directly to the sole plate.

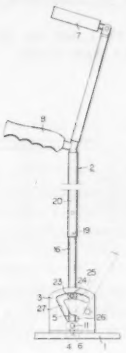
3,868,122

AUXILIARY SKI FOR PHYSICALLY HANDICAPPED PERSONS

Takafusa Negi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 21, 1973, Ser. No. 372,179
Claims priority, application Japan, June 26, 1972, 47-63867
Int. Cl. A63c *11/22*
U.S. Cl. 280—11.37 B **10 Claims**

1. A ski composing; a ski runner having a through hole therein; a guide member erected from said ski runner; a pole next to and tiltably supported with respect to said guide plate member and said pole being movable in its lengthwise direction with respect to said ski runner, said guide plate member having a pair of pole locking slots formed at two different positions in the lengthwise direction of said pole and further having a guiding slot interconnecting said pair of pole locking slots; and guiding means fixed to said pole and movable along said pole locking slots and guiding slot, said guiding means being lockable within said pole locking slots, locking of said guiding means within one of said pole locking slots permitting said pole to be retained in one of its movable positions in the lengthwise direction thereof, locking of said guiding means within the other of said pole locking slots permitting said pole



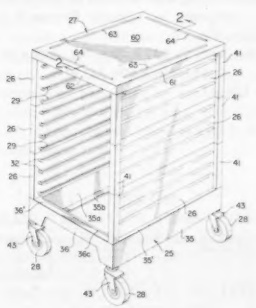
to be retained in another of its movable positions in the lengthwise direction thereof; said tiltable supporting of said pole is effected by rotatably pivoting said pole with respect to the guide plate member about a pivot, and said one of said pole locking slots is located more distant from said pivot of said pole than the other of said pole locking slots, and is elongated and curvedly shaped to define an arc of a circle having a center at said pivot of said pole.

3,868,123

FOOD SERVICE STORAGE VEHICLE

Donald P. Berg, Shaker Heights; Carl E. Bochmann, Brecksville, both of Ohio, and Anthony J. Brescia, Winchester, Va., assignors to Rubbermaid Commercial Products, Inc., Winchester, Va.

Filed Dec. 10, 1973, Ser. No. 423,263
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.2 **17 Claims**



1. A food service storage and transport vehicle having a rectangular molded plastic base, casters supporting the corners of said base, vertical posts having their bottom portions inserted in said corners, insert means rigidly connecting said bottom portions within said base to said casters, stacked side wall sections of molded plastic supported on said base and

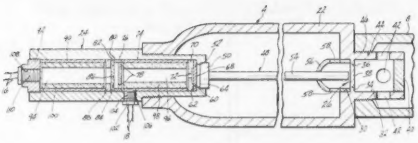
having tubular end portions telescopically fitting said posts, a rectangular top section of molded plastic fitting over the tops of said posts, and latch means mounted in said top section wedgably engaging said posts.

3,868,124

INFLATING DEVICE FOR USE WITH VEHICLE SAFETY SYSTEMS

James T. Johnson, Herrin, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 5, 1972, Ser. No. 286,482
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **3 Claims**



1. An apparatus for use in connection with safety systems of the type including an inflatable member, a stored fluid under pressure, and a propellant for the generation of hot gas, said apparatus including:

a. storage means for storing a fluid under pressure and including a closed outlet;

b. propellant storage means for storing at least two distinct propellant charges in separate propellant chambers;

c. a propellant charge in each of said propellant chambers;

d. means for igniting only one of said propellant charges in response to the sensing of a condition wherein slow deployment of the system can be used, and for causing the ignition of all of said propellant charges in response to the sensing of a condition wherein fast deployment of the system is required;

e. means providing communication between each of said propellant chamber and said storage means if the propellant charge therein is ignited; and

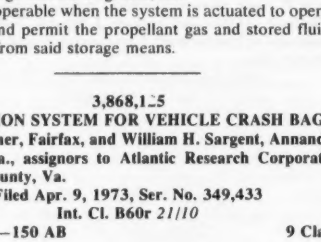
f. means operable when the system is actuated to open the outlet and permit the propellant gas and stored fluid to escape from said storage means.

3,868,125

INFLATION SYSTEM FOR VEHICLE CRASH BAG

Philip D. Fisher, Fairfax, and William H. Sargent, Annandale, both of Va., assignors to Atlantic Research Corporation, Fairfax County, Va.

Filed Apr. 9, 1973, Ser. No. 349,433
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **9 Claims**



1. A system for inflating a crash bag in a vehicle, comprising:

an aspirator assembly mounted within the vehicle, said aspirator assembly including:

a. a housing for storing the bag, said housing comprising a first section having an opening therein for admitting ambient air into the housing, and a second section movable relative to said first section for movement between a first position covering said opening and a second position exposing said opening and elongating said housing, said bag being secured to said second housing section,

b. a nozzle assembly mounted within said housing, and

c. gas generating means connected to said nozzle assembly,

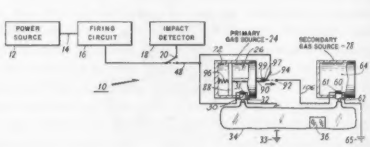
whereby when said generating means is activated, generated gas flows through said nozzle assembly into said housing to effect initial inflation of said bag and to cause said second housing section to move from said first position to said second position to enable ambient air to enter said housing through said opening, the elongated housing permitting optimum expansion of the gas and inducing rapid flow of ambient air into said housing.

3,868,126

PLURAL INFLATION FOR SAFETY DEVICE

Donald G. Radke, and Donald J. Lewis, both of Troy, Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,971
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **28 Claims**



1. Apparatus for successively inflating a bag with gas from a plurality of gas sources disposed in a vehicle subject to a plurality of collisions, comprising:

a. a power source for supplying an electrical current;

b. circuit means connected to the power source, said circuit means including impact detecting means for causing the current to flow through the circuit means upon each impact of the vehicle;

c. a primary gas source including pressurized gas;

d. a secondary gas source for supplying a gas selected from the group consisting of pressurized gas, gas developed by combustion of gas generating material, and mixtures thereof;

e. a first gas releasing means connected to the primary gas source and to the bag, and a second gas releasing means connected to the secondary gas source and to the bag, said first and second gas releasing means respectively permitting gas from the primary and secondary gas source to flow into the bag upon receipt of the electrical current; and

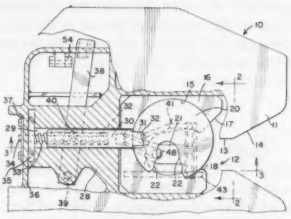
f. a pressure sensitive control means, electrically connected to the circuit means, said pressure sensitive control means being in communication with said pressurized gas of said primary gas source so as to be continuously and directly responsive to the pressure of gas within the primary gas source, whereby said pressure sensitive control means electrically connects the first gas releasing means to the circuit means whenever the pressure of gas within the primary gas source is at least a preselected minimum pressure, and electrically connects the second gas releasing means to the circuit means only if and whenever the pressure of gas within the primary gas source is less than the preselected minimum pressure.

3,868,127

ENGAGED KINGPIN DETECTOR ASSEMBLY FOR FIFTH WHEEL PLATE

Walter J. Marulic, Gary, Ind., and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 26, 1974, Ser. No. 492,296
Int. Cl. B62d 53/08
U.S. Cl. 280—434 5 Claims



1. A fifth wheel plate assembly for connection with the kingpin of a trailer, comprising a plate having a substantially circular opening and an entry slot communicating with said opening,

a coupler jaw supported for turning movement within said opening,

said coupler jaw having an open end slot in one position adapted to communicate with said entry slot to receive a kingpin,

said coupler jaw during rotating movement from said one position to a locked position locking said kingpin to said plate,

locking means on said coupler jaw,

a locking element movable into engagement with said locking means to releasably lock said coupler jaw against rotation in said locked position, said locking element including a spring biased plunger normally urged into engagement with said locking element, said plunger having indicator means positionable to indicate locked and unlocked positions of said plunger, the improvement comprising;

an engaged kingpin detector assembly connected to and positioned below said plate,

said assembly including an arm,

a stop on said arm,

said arm being normally biased into engagement with said locking element whereby said stop prevents movement of said locking element into engagement with said locking means,

and means on said arm engageable by the kingpin in the closed position only when said kingpin is in a proper vertical position relative to said arm whereby a downward force of the kingpin on said arm moves the same and said stop out of engagement with the locking element permitting said locking element to engage said locking means.

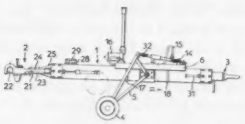
3,868,128

DRAW BAR FOR TOWING AIRCRAFT

Yves Mahieu, Arleux, France, assignor to Societe Anonyme dite: Ateliers Mecaniques du Douaisis, Douai, France

Filed Sept. 12, 1973, Ser. No. 396,433
Claims priority, application France, Sept. 15, 1972, 72.33382
Int. Cl. B60d 3/00
U.S. Cl. 280—453 6 Claims

1. A draw bar for towing aircraft, comprising a tube, a first head on one end of the tube for attachment to an aircraft, a second head on the other end of the tube for attachment to a tractor, a wheel-support frame, means mounting the tube on said wheel-support frame for movement about its longitudinal



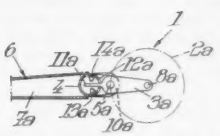
axis, and means mounting said frame and tube for pivoting about a transverse axis.

3,868,129

VEHICLE SUSPENSIONS

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobile Citroen, Paris, France

Filed May 22, 1973, Ser. No. 362,667
Claims priority, application France, June 1, 1972, 72.19739
Int. Cl. B60g 11/60
U.S. Cl. 280—106.5 R 11 Claims



1. Wheel suspension means for a vehicle having a rigid structure, comprising

a rigid hollow element connected with the vehicle structure, said hollow element including a wall portion containing an opening;

a pivot axle connected in parallel laterally spaced relation relative to said hollow element and opposite said opening; a wheel arm pivotally connected with said axle, said wheel arm being adapted to rotatably support at a location remote from said pivot axle a wheel of the vehicle; a first rigid projection connected with said wheel arm and extending radially relative to said pivot axle into said opening; and

a pair of elastic stop members mounted within said rigid hollow element on opposite sides of said rigid projection, respectively, said stop members being contained in a plane normal to the plane of said pivot axle, whereby upon pivotal movement of said wheel arm, said rigid projection is brought into contact with at least one of said elastic stop members.

3,868,130

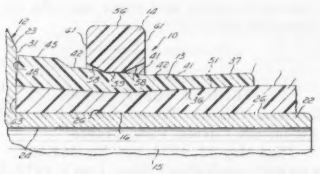
ADJUSTABLE REUSABLE TUBING END FITTING

Gary T. Schwertner, and Russell W. Zajaczkowski, both of Cleveland, Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Aug. 16, 1971, Ser. No. 172,036
Int. Cl. F16l 33/00
U.S. Cl. 285—243 9 Claims

1. A fitting assembly for a flexible hose comprising a tubular insert having an elongated portion of generally circular cross section, a flexible hose having substantially uniform inside and outside diameters at one of its ends, the outer surface of said insert portion defining a diameter substantially equal to the inside diameter of the end of

said hose, said insert portion being positioned within the end of said hose to internally support it, a resiliently deformable tubular collar defining a first clamping member, said collar having an inner diameter substantially equal to the outer diameter of the hose and outer peripheral surface means, said collar being positioned over the end of said hose with at least a portion of the collar forming said surface means within an axial zone of said hose supported by said insert portion, a ring element defining a second clamping member, said ring element having an aperture therethrough at least large enough to permit said hose to extend therethrough, said ring element having internal surface means adapted to cooperate with said collar surface means, the



surface means of one of said clamping members including axially separate zones, a first of said zones being axially tapered outwardly in a forward direction towards said hose end, a second of said zones adjacent said first zone having less outward taper in said forward direction than said first zone, said first zone causing said collar to radially constrict when said ring element is pushed axially forward onto said collar to thereby grip said hose and lockingly compress the hose onto said insert portion, said ring being releasably retained on said collar by frictional engagement of said second zone with the surface means of the other of said clamping members, said surface means of said members permitting removal of said ring element from said collar and release of said hose from said insert when said ring element is pulled rearwardly off of said collar.

3,868,131

METHODS AND DEVICE FOR WELDING A METAL PIPE TO A METAL BODY BY MEANS OF AN EXPLOSIVE CHARGE

Nicolaas Abraham Zondag, Roosendaal, Netherlands, assignor to Ultracentrifuge Nederland N.V., The Hague, Netherlands

Filed Nov. 30, 1973, Ser. No. 420,690

Int. Cl. F16l *13/02*

U.S. Cl. 285—286 **13 Claims**

1. A method for welding to a metal body having a throughgoing boring a metal pipe extending through said boring and having an outer diameter which is smaller than that of said boring, said welding being effected with the aid of an explosive charge extending within said pipe in the region of said boring and adapted to be fired from the outside, said method comprising the steps of placing a shielding plate having a boring with its boring in coaxial register with the boring of the body against a surface of the body, the boring of the shielding plate having a diameter which is equal to the outer diameter of the pipe so that the pipe fits the boring and being so rounded off at its edge adjacent to the body as to have in the surface facing the body a diameter which is at least equal to that of the boring of the body, passing said pipe with an end thereof through the boring of the body and at least inserting said pipe with that end into the fitting portion of the boring of the shielding plate, inserting before or after the insertion of the pipe into the body and the shielding plate an explosive charge having a composition, of which the velocity of detonation is substantially equal to the velocity of sound in the material of the pipe, into the pipe end portion extending in the body and the shielding plate and firing said charge from its end lying nearest to the shielding plate.

3,868,132

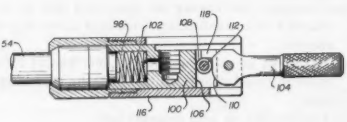
QUICK MOUNT FITTING

William H. Racine, P.O. Box 378, Lakeside, Mich. 49116

Continuation-in-part of Ser. No. 229,754, Feb. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,480, May 10, 1971, Pat. No. 3,738,688. This application June 21, 1973, Ser. No. 371,977

Int. Cl. F16l *37/18*

U.S. Cl. 285—312 **4 Claims**



1. A fitting for outside diameter sealing of a smooth walled tube end including:

a body, a passage in such body,

an entry for said tube end in such body, an inwardly continuous tapered area at said body entry,

an annular elastomeric seal within said body, said seal having a dimension greater than said body entry,

a ram element within the body, the end of said ram element having a torquing face, a passageway in said ram element communicating with said body passage, a socket in said ram element having a bottom wall,

a split collet element positioned between said seal and said body entry,

an elongated cam element pivotally mounted to said body and movable against the ram element within said body against said seal to distend same in sealing action against said tube end and to force the split collet into engagement with said body entry and said tube end, said cam element having a cam surface,

a spring in said ram socket, one end of said spring bearing against said bottom wall and the other end of said spring bearing against the end of the tube inserted into the fitting, thereby preventing the tube from bottoming in the ram socket whereby movement of the ram element compresses the spring but does not push the tube out of the fitting and

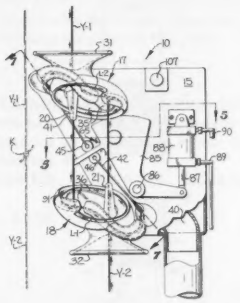
a wear resistant element interposed between the cam surface of the elongated cam element and the torquing face of the ram element, said wear resistant element providing reduced frictional force between the torquing face and the cam surface.

3,868,133

PNEUMATIC YARN KNOTTER MECHANISM

Gustav Franzen, Krefeld, Germany, assignor to Palitex Project-Company GmbH, Krefeld, Germany

Filed June 18, 1974, Ser. No. 480,573
Claims priority, application Germany, June 18, 1973, 2330997
Int. Cl. B65h 69/04
U.S. Cl. 289—2 10 Claims



1. A pneumatic yarn knotter mechanism for use alone and especially for use on a yarn processing machine, such as a twister, spinning frame or the like, for knotting together broken or otherwise separated ends of yarn being processed thereby and being characterized by a purely pneumatic knot tying operation which eliminates moving parts acting directly on the yarns; said yarn knotter mechanism comprising:

a frame;

a pair of knot tying housings carried by said frame in longitudinally-spaced, mirror-image relation to each other and having inside faces facing each other and outside faces facing away from each other;

an injector nozzle means formed in and extending longitudinally through each of said housings to define opposing, longitudinally-extending, axially-offset, parallel, yarn passageways from said housing outside faces to said inside faces, said nozzle means each including a thin, radially and longitudinally-extending slot therethrough, each of said nozzle means including means for supplying air under pressure thereto for creating opposing air streams therethrough from said housing outside faces to said inside faces, whereby yarn ends positioned at said housing outside faces will be sucked in and carried through said nozzle passageways and impinged upon said opposite housing inside faces;

recessed, open-sided, curved, continuous, knot tying, guide surfaces formed on said housing inside faces around said nozzle means and each defining an interlooped, yarn passageway on each of said housing inside faces having an entrance and an exit and being generally in the shape of a loosely tied knot loop and being positioned for receiving at said entrance thereof the yarn end and air stream from said opposite housing nozzle and passing the yarn end and air stream around the other yarn end being carried through the same housing nozzle and out of said exit thereof for the tying of a knot of each of said yarn ends around the other of said yarn ends; and

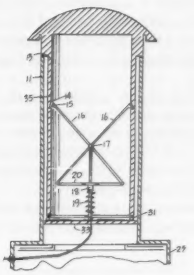
suction conduit means contained in said frame and opening adjacent said exits of said knot tying passageways for receiving and sucking in the loose ends of yarn from said exits after the knot tying operation and for pulling the loosely tied knot and yarn out of said knot tying housings through the open sides of said guide surfaces and through said slots in said nozzle means and for tightening the tied knot.

3,868,134

REMOTE CONTROLLED GAS CAP LOCK

Holger Jorgensen, 610 Alliance Ave., Toronto, 334 Ontario, Canada

Filed Sept. 4, 1973, Ser. No. 394,158
Int. Cl. B65d 55/14
U.S. Cl. 292—28 1 Claim



1. A latching mechanism for fastening a cap of a fuel tank of an automobile to the tank filler tube, with said latching mechanism controlled by a flexible cable which is operated from a remote position, in which the cap of the fuel tank is fitted with a tubular projection that extends into the tube of the fuel tank filler tube, in the closed position, said tubular projection formed with a recess on its internal wall, and said latching mechanism mounted inside the fuel tank filler tube, shaped to engage in the closed position the recess in the wall of the tubular projection of the cap, with said flexible cable fastened through a sleeve joint in the fuel tank wall to the latching mechanism.

3,868,135

DEVICE FOR REMOVING ANIMAL DROPPINGS

Luke P. Magliaro, 79 Passaic Ave., Berkeley Heights, N.J.

Filed Apr. 23, 1973, Ser. No. 353,695
Int. Cl. A01k 23/00, 29/00
U.S. Cl. 294—1 R 6 Claims

1. A device for removing animal droppings which comprises in combination:

a receptacle constructed to operate from closed to open position,

said receptacle comprising a partial enclosure including a flat base member partially closed on three sides by a back wall between two side walls, and open at the top and along one edge,

a hinged closure pivotally connected along said one edge,
said hinged closure forming in open-faced position an extension in substantially the same plane as said base member,
a long hollow shaft rigidly fastened externally to the back of said partial enclosure, and positioned to extend upwardly when said base member is seated horizontally,
a mechanism for opening and closing said receptacle comprising an elongated lever on the under side of said base member extended in a direction substantially normal to said open edge and having one end fixed externally to the extension of said base member in a position substantially midway between said side walls, and having the other end free,
a cable connected at one terminal to the free end of said lever and passing slidably through said shaft,
said cable terminating at its other end in a handle adjacent the top of said shaft for slidably manipulating said cable in said shaft to move said closure from closed to open position, and vice versa, and
means for accommodating and holding one flap of a disposable container in place on the face of said hinged extension.

3,868,136

TOOL FOR MANUAL MANIPULATION OF DEVICES FOR APPLICATION TO AND REMOVAL FROM HIGH VOLTAGE CONDUCTORS

Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60062

Filed Mar. 25, 1974, Ser. No. 454,474
Int. Cl. B25b *27/00*
U.S. Cl. 294—19 R **5 Claims**

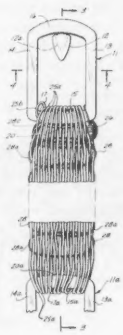
1. A tool for applying and removing an electrical measuring device having an apertured support bracket to and from a high voltage electrical conductor comprising, in combination, a tubular insulating housing having a lengthwise extending slot near one end, and an insulated operating rod movable endwise within said housing and out of the other end thereof; said operating rod at its inner end having a handle extending through and slidable in said slot for manual manipulation of said operating rod, and said operating rod at its outer end having a finger for entering the aperture in said support bracket to draw the same into said other end of said housing on movement of said handle toward the one end of said slot adjacent said one end of said housing, said operating rod being bowed intermediate its ends to provide frictional resistance between it and the inner surface of said housing to relative longitudinal movement thereof.

3,868,137

CARGO SLING AND FEED-THROUGH LINK THEREFOR

John William Friend, 3000 Nassau Dr., Vero Beach, Fla. 32960

Filed Sept. 4, 1973, Ser. No. 394,182
Int. Cl. B66c *1/18*
U.S. Cl. 294—74 **17 Claims**



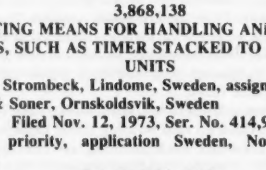
1. A link for cargo slings comprising a unitary, generally rectangular-shaped member having parallel sides of uniform cross-section; a bottom cross member to which a cargo sling is secured, said bottom member being perpendicularly disposed between said parallel sides and having a rounded upper face tapering toward a rounded, slightly outwardly curved lower face and providing a generally triangular cross-section for said bottom member in a direction longitudinally of said link; and, an outwardly curved top cross member having a rounded inner surface tapering toward a rounded outer surface and providing a generally triangular cross-section for said top cross member in a direction longitudinally of said link, the overall length and overall width of said link being such that a first link can be passed through a second, identical link when said first link is oriented so that its width is substantially in the same plane as the diagonal of said second link.

3,868,138

HOISTING MEANS FOR HANDLING AND LIFTING OBJECTS, SUCH AS TIMER STACKED TO FORM LOAD UNITS

Per Albin Strombeck, Lindome, Sweden, assignor to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed Nov. 12, 1973, Ser. No. 414,962
Claims priority, application Sweden, Nov. 21, 1972, 15088/72
Int. Cl. B66c *1/62*
U.S. Cl. 294—74 **10 Claims**



1. Hoisting means for use with hoisting cranes or the like for handling and lifting objects in the form of load units (25) of

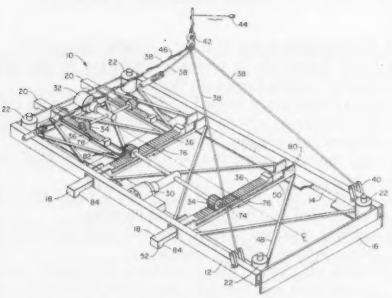
the type which is held together by two separate wirings (26), said means comprising a support unit (14) adapted to be carried by the crane and having gripping members (27), said support unit (14) being provided with at least four lifting heads (28,28') arranged in pairs, each lifting head being provided with a single gripping member (27), means mounting said gripping members for movement in the longitudinal and transverse directions of the support unit to cause said gripping members, when the load is gripped, to slide against the load in opposite directions in the longitudinal direction of the support unit in order to grip in pairs under one wiring end, and means thereafter to move the gripping members in pairs outwardly away from each other in the transverse direction of the support unit towards the sides of the load.

3,868,139

CONTAINER HANDLING SPREADER BAR

Joseph A. Drelicharz, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1974, Ser. No. 446,855
Int. Cl. B66c 1/66
U.S. Cl. 294—81 SF **8 Claims**



1. A container handling spreader bar comprised of:
a. a rectangular frame;
b. a skirt attached to the frame and extending downward along one side and the adjacent end;
c. first and second pairs of substantially parallel, spaced apart, movable arms mounted in the frame and extendable from the side and end opposite the skirt;
d. downward projections on the ends of said arms for drawing the spreader bar into alignment with the top of a container after placement;
e. means for extending and retracting the movable arms;
f. means for automatically energizing the arm retracting means when the spreader bar is placed on top of a container;
g. four self-locking retractable dogs attached to each inside corner of the frame;
h. means for retracting the dogs;
i. means for keeping the dogs retracted during positioning of the spreader bar; and
j. means for automatically releasing the dogs when the spreader bar is aligned with the top of a container.

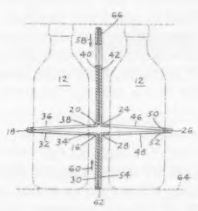
3,868,140

CONTAINER CARRIER

Robert L. Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,710
Int. Cl. B65d 71/00
U.S. Cl. 294—87.2 **8 Claims**

1. A collapsible carrier for containers having parallel body walls, said carrier being formed from a rectangular blank of material and adapted to carry at least two containers, said carrier in its erected container carrying condition comprising, a downwardly extending container separator section,
an upwardly extending handle section upwardly movable with respect to said separator section,
and a container receiving section on each side of and intermediate said separator and handle sections,
each of said container receiving sections comprising an upper and a lower transverse panel, each of said upper panels being foldable along a first score line with respect to said handle section and each of said lower panels being foldable along a second score line with respect to said separator section, said upper transverse panel being adapted to be placed in substantially parallel relationship with respect to said lower transverse panel,
each of said lower transverse panels having an inner end, the inner end of one of said lower transverse panels being joined to the inner end of the other of said lower transverse panel at said second score line,
each of said upper and lower transverse panels having a container receiving opening formed therein,
each of said openings being of substantially equal size and of a shape substantially the same as the shape of a transverse cross section of said parallel body-walled container, the opening in said upper transverse panel being in register with the opening in said lower transverse panel when said upper transverse panel is placed in said substantially parallel relationship with respect to said lower transverse panel,



each of said openings in register being adapted to receive the body of a container, said downwardly extending separator section being sufficiently long as to extend downwardly to a plane formed by the bottom of said containers when said transverse panels are placed in said substantially parallel relationship whereby said container receiving sections are located at a predetermined position with respect to the parallel body walls of said containers and the upper edge of said upwardly extending handle section is substantially aligned with the top of said containers when said separator section extends to said plane formed by the bottom of the containers,
and the edges of said openings being adapted to grip the parallel walls of the body of said container when said handle section is raised with respect to said container separator section to move said upper and lower transverse panels out of said parallel relationship.

3,868,141

VEHICULAR SAFETY DEVICE

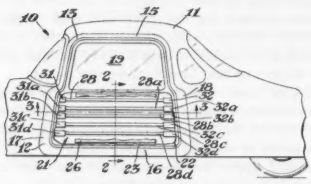
John E. Johnson, Madison, Wis., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 370,243, June 15, 1973, abandoned. This application July 27, 1973, Ser. No. 383,430
Int. Cl. B60r 21/02
U.S. Cl. 296—28 R **11 Claims**

1. A vehicle member, the vehicle member comprising a supporting frame, the supporting frame enclosing therein a region of probable impact, and

first and

second frame portions generally oppositely disposed and having therebetween the region of the probable impact, at least one resilient deflectable generally bar shaped member having a major axis, the member being disposed



between opposed frame portions and supported by and slidably affixed to said frame portions, the member being slidable in the direction of the major axis whereby an impact in the region of probable impact and deflection of the member, relatively little force is exerted which would serve to draw frame member portions together.

3,868,142

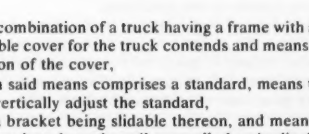
ADJUSTABLE TRUCK COVER

Ernest C. Bachand, Millbury, and Frederick G. J. Grise, Wilbraham, both of Mass., assignors to Pioneer Coveralls Inc., North Oxford, Mass.

Filed May 31, 1973, Ser. No. 365,469

Int. Cl. B60j *11/00*

U.S. Cl. 296—98 **7 Claims**



1. The combination of a truck having a frame with an extensible flexible cover for the truck contends and means to adjust the position of the cover,

wherein said means comprises a standard, means to generally vertically adjust the standard,

a rail, a bracket being slidable thereon, and means to slide the bracket along the rail generally longitudinally of the frame,

means to support the cover on the standard and the frame, the means to support the cover on the bracket comprising a member movable generally fore and aft with respect to the bracket,

said member being elongated, and including means on the bracket to swingingly mount the member at one end, said member having an end portion of the cover connected thereto at the opposite end, extending the cover as the member moves aft, and means to retract and roll up the cover.

3,868,143

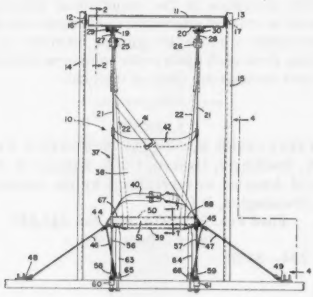
CRASH LOAD ATTENUATING TROOP SEAT

Mason J. Reilly, Media, Pa., assignor to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1973, Ser. No. 354,425

Int. Cl. B60r *21/10*

U.S. Cl. 297—216 **9 Claims**



1. A collapsible safety seat for a vehicle comprising:

a beam formed to be pivotally supported by the vehicle structure along the length thereof;

a pair of rigid struts formed at respective one ends thereof to be pivotally attached to the vehicle floor at a spaced interval beneath said beam;

a rigid member connected between the other ends of said struts;

a pair of flexible suspenders connected between the respective ends of said beam and said member;

a webbing attached at each end intermediate the ends of respective ones of said suspenders;

a flexible sling having upper and lower portions for supporting the back and buttocks, respectively, of an occupant, said upper portion being attached to said webbing and said lower portion being attached to said member;

a pair of tie-down straps formed to be attached at respective one ends thereof to the vehicle floor in a vicinity beneath said member and at respective other ends thereof to the vehicle floor outwardly from the ends of said member; and

a lap belt formed to encompass said lower sling portion and attached at respective sides thereof to said tie-down straps adjacent to the sides of said lower sling portion.

3,868,144

SPRING MECHANISM FOR A TILTABLE MEMBER OF A TILTING CHAIR

Finn Lie, 2391 Moelv, Norway

Filed Feb. 12, 1973, Ser. No. 331,704

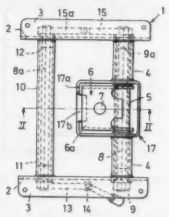
Claims priority, application Norway, May 31, 1972, 1926/72

Int. Cl. A47c *7/00*

U.S. Cl. 297—304 **7 Claims**

1. A spring mechanism for a tiltable member of a tilting chair having a base, said spring mechanism comprising a support member mountable on the base, a frame including side pieces, means connecting the frame to the support member for pivotal movement about a horizontal tranverse tilting axis, the latter said means comprising first and second torsion bars extending transversely of the side pieces of the frame, said first torsion bar extending in horizontal alignment with said transverse tilting axis, said second torsion bar being spaced rearwardly thereof, a first tube-shaped member secured to the support member, tube-shaped bearing sleeves secured to said side pieces of the frame and rotatably receiving said first tube-shaped member, a second tube-shaped member spaced rearwardly from said first tube-shaped mem-

ber and secured to said side pieces of the frame, said first torsion bar extending longitudinally within said first tube-shaped member, said second torsion bar extending longitudinally and freely rotatably within the second tube-shaped member, means at one of the side pieces of the frame connecting one end of said first torsion bar non-rotatably to the first tube-shaped member, further means at said one side piece of the frame connecting one end of said second torsion bar non-rotatably to said one side piece, means at the other side piece of the frame operatively interconnecting the other of the ends of the first and second torsion bars so that as the frame is tilted both torsion bars will twist simultaneously and exert a combined resilient restraining force in opposition to the



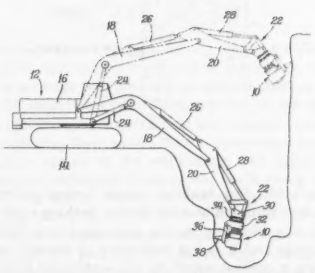
tilting movement of said frame, said means which operatively interconnects said other ends of the torsion bars comprising levers respectively fixed to said other ends of the torsion bars and extending towards one another, said levers having free ends freely overlapping one another, and contact means carried by one of said levers at said free end thereof and freely bearing against the free end of the other of said levers to provide a substantially point contact between said levers when they are moved relative to one another in one direction while permitting unhindered relative movement in the other direction, and stop means operatively cooperating between said frame and said support member for limiting the tilting movement of said frame relative to said support member in a direction opposite the normal direction of tilting of said frame.

3,868,145

ECCENTRIC RING IMPACTING MECHANISM FOR IN-SITU ROCK BREAKERS

Delwin Earl Cobb; Jerry Dale Fidler, both of Peoria; Nathan Gutman, Washington; Richard Edward Livesay, Peoria, and Orrin Arthur Stemler, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 23, 1973, Ser. No. 390,911
Int. Cl. E21c *27/28*
U.S. Cl. 299—37 **14 Claims**



1. An impact mechanism for delivering intermittent impact blows to a rock fracturing shank comprising:

a housing;

a drive shaft having an eccentric journal rotatably mounted in said housing;

a fracturing shank reciprocably mounted adjacent said housing and having an impact receiving member extending into said housing and a fracturing tip extending away from the impact receiving member;

an annular impact member having a plurality of impact faces rotatably mounted in said housing on said eccentric journal and driven by said shaft in orbital path for intermittent engagement of said impact faces with said impact receiving member; and,

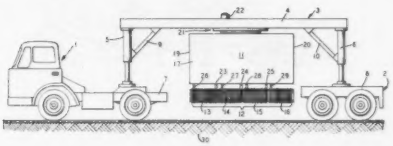
means for constraining said impact member to rotate about its axis in a direction opposite the direction of rotation of said driven shaft when driven in said orbital path.

3,868,146

PAVEMENT GROOVING MACHINE

Stafford M. Ellis, Bearsted, England, assignor to Super-Cut, Inc., Chicago, Ill.

Filed June 9, 1972, Ser. No. 261,360
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **1 Claim**



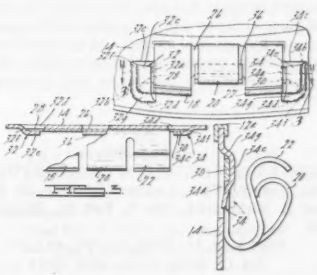
1. A pavement grooving machine comprising a truck means and trailer means, an upright yoke connected between the truck means and trailer means, a bank of rotary cutting blades, horizontally rotatable support means for the bank of cutting blades rotatably dependingly mounted on the yoke between the truck means and trailer means, the bank of blades being dependingly mounted on the rotatable support means, the rotatable support means being sufficiently rotatable to provide the bank of blades with selective first and second cutting positions disposed at least 90° apart, the yoke including a substantially horizontally disposed beam carrying the rotatable support means, and a plurality of legs substantially at opposite ends of the beam, each leg being mounted on one of the truck and trailer means, said legs being vertically adjustable for selective raising and lowering of the beam.

3,868,147

WHEEL TRIM

Hans R. Beisch, Amherstburg, Ontario, Canada, assignor to Norris Industries, Inc., Ypsilanti, Mich.

Filed Apr. 4, 1974, Ser. No. 457,814
Int. Cl. B60b *3/00*
U.S. Cl. 301—37 C **20 Claims**



20. A wheel trim assembly for disposition on the axially outer face of a vehicle wheel having a wheel flange, said wheel trim assembly comprising: an annular retention band member; a spring retention clip member disposed on said retention

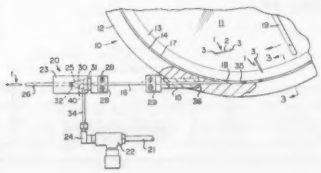
band member and engageable with the wheel flange for mounting the wheel trim assembly on the wheel; and means for securing said spring retention clip member to said retention band member comprising a pair of spaced retention tabs on one of said members and a pair of projecting tabs on the other of said members, each of said retention tabs extending away from said one member across one of said projecting tabs and back toward said one member to rigidly affix said two members together.

3,868,148

TRUNNION BEARING FEEDER

George E. Schultz, Clearwater, Fla., assignor to Tangen Drives, Inc., Clearwater, Fla.

Filed Apr. 23, 1973, Ser. No. 353,299
Int. Cl. B65g *51/02*
U.S. Cl. 302—2 R **3 Claims**



1. A trunnion bearing feeder comprising in combination,
— a feeder having a side wall,
— the interior of said feeder having nesting means at its periphery cooperating with said side wall for aligning trunnion bearings in end to end single file orientation, said feeder having means for imparting movement to said trunnion bearings positioned therein to advance said trunnion bearings for further conveying from said periphery,
— pick-up tube means tangentially aligned along a portion of the periphery of said feeder and in communication with said nesting means,
— an adapter bracket provided in the side wall of said feeder having clamping means for securing said pick-up tube means in longitudinal relationship with said feeder and with said nesting means,
— said pick-up tube means extending outwardly from said adapter bracket,
— a venturi provided downstream of said pick-up tube means and in closed communication therewith to provide negative pressure within said pick-up tube means and positive pressure downstream of said pick-up tube means,
— said venturi operationally functioning to introduce the trunnion bearings into said pick-up tube means in single and spaced relation one to the other and to draw the same into and through said venturi and to accelerate the same under positive pressure further downstream of said pick-up tube means in a continuous and uninterupted flow path.

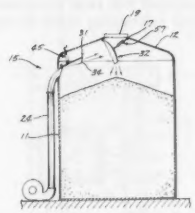
3,868,149

MATERIAL DISTRIBUTING APPARATUS FOR A SILO

Curtis C. Weaver, 901 S. Congress St., Polo, Ill. 61064, and Robert E. Kirkpatrick, 506 N. Taft St., Humboldt, Iowa 50548

Filed Mar. 21, 1974, Ser. No. 453,273
Int. Cl. B65g *53/40*; **A01f** *25/16*
U.S. Cl. 302—60 **5 Claims**

1. An apparatus comprising a silo having a circular side wall, a roof and a material conveyor tube having a delivery end open to said silo through an upper portion of the silo and a material distributing apparatus comprising:
a. a pair of material deflector members,
b. means pivotally supporting one of said deflector members adjacent the top side of the delivery end of said conveyor tube for up and down pivotal movement in a path longitudinally of the silo,
c. means pivotally suspending the second one of said deflector members from a central portion of said roof for pivotal swinging movement in a path transversely of said silo, and



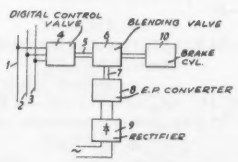
d. means for relatively adjusting said first and second deflector members such that during filling of the silo material from said conveyor tube discharged against said first deflector member is directed against said second deflector member for discharge from said second deflector member in a direction axially and downwardly of said silo.

3,868,150

BRAKE CONTROL APPARATUS FOR A BLENDING BRAKING SYSTEM TO REDUCE EFFECTS OF RELATIVE BRAKING RESPONSE TIMES

Arthur Maskery, London, England, assignor to Westinghouse Brake & Signal Company Limited, London, England

Filed June 11, 1973, Ser. No. 368,727
Claims priority, application Great Britain, June 21, 1972, 29177/72; Sept. 21, 1972, 43743/72
Int. Cl. B60t *13/74*
U.S. Cl. 303—20 **4 Claims**



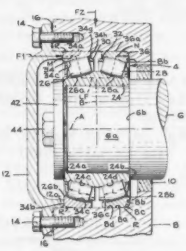
1. For a blending braking system having electric braking means and additional braking means, braking control apparatus including blending means responsive to a braking command signal and a signal indicative of electric braking for producing a control signal for the additional braking means for causing the additional braking means to make up for a deficiency between the electric braking and the braking called for by the command signal, and means responsive to a signal indicative of a changing electric braking effect for causing said control signal to change by an amount appropriate to a greater change of electric braking.

3,868,151

ROLLER BEARING WITH TAPERED OUTER RACE RING

William J. Derner, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed May 4, 1973, Ser. No. 357,282
Int. Cl. F16c *13/00*
U.S. Cl. 308—207 6 Claims



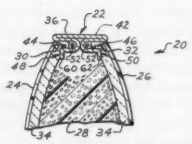
1. A roller bearing for mounting in a member, said bearing having an inner race, a circle of canted rollers, and a wedge shaped outer race, the outer surface of said outer race having a central cylindrical portion for receipt in said member, the improvement comprising a relieved portion on the outer surface of said outer race with a diameter gradually and progressively diminishing from said central cylindrical portion to the end of the race to permit cocking of the outer race to equalize the distribution of the load on the rollers and relieve excessive load on the edges of the rollers.

3,868,152

REFRIGERATOR CABINET CONSTRUCTION

Farris E. Dixon, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 12, 1974, Ser. No. 460,345
Int. Cl. F25d *23/06*
U.S. Cl. 312—214 5 Claims



1. In a household refrigerator having opposed walls and first and second compartments separated by a partition, said partition having an edge first and second spaced-apart walls forming a cavity therebetween, a first material within the cavity and substantially covering the first and second walls, a face element extending from within the cavity to a location overlying at least a portion of the walls along said partition edge, heating means positioned between the walls along the partition edge, and foam insulation material within the cavity between and adhering to the first material of the first and second walls, the improvement comprising:

each of said first and second walls having a flange portion extending along the length of the partition edge and being directed generally toward and spaced from one another in the assembled position;

said face element having opposed end portions and being enfolded to form a planar face, first and second opposed channels, and first and second outwardly extending flanges, said first and second channels having an associated wall flange nested therein, the heating means nested in one of the channels between the face element and the associated wall flange, and said first and second outwardly extending flanges contacting the first material and adhering to the foam insulating material; and

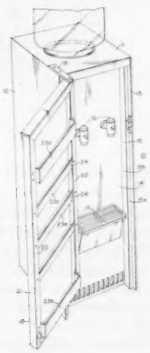
means for connecting opposed ends of the face channel to opposed walls of the refrigerator.

3,868,153

CABINET FOR A WATER COOLER

Carl E. Sholtes, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 5, 1973, Ser. No. 321,404
Int. Cl. A47b *77/08*
U.S. Cl. 312—236 10 Claims



1. Cabinet construction for a water cooler apparatus including a housing having a front panel and liquid dispensing faucet extending forwardly of said front panel, said front panel supporting a drip trough directly below said faucet for catching and retaining liquid dripping from said faucet, a door structure hingedly supported for movement between an open position permitting access to said faucet and a closed position generally covering said front panel and concealing said faucet, said door structure having an inner face with a plurality of shelves supported thereon and extending generally horizontally toward said front panel when said door is in a closed position, at least one of said plurality of shelves disposed so as to be at an intermediate height relative to said faucet and said drip trough, and of said shelves disposed at said intermediate height being of sufficiently limited depth in a front to rear direction so as not to interfere with the normal drip path from said faucet to said trough so that any drippage occurring when said door is closed does not contact any of said shelves.

3,868,154

CART FOR DIALYSIS MACHINE

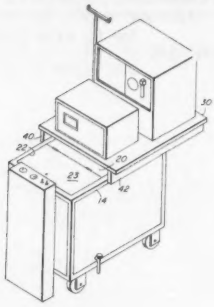
Francis X. MacDonald, Canton, and Paul M. MacDonald, Scituate, both of Mass., assignors to P. X. Industries, Inc., Rockland, Mass.

Filed Oct. 9, 1973, Ser. No. 404,349
Int. Cl. A47b *91/00*, *81/00*
U.S. Cl. 312—250 3 Claims

1. A cart for use in a mobile kidney dialysis station, comprising

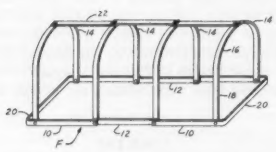
(a) a frame including horizontally disposed top and bottom members of rectangular outline and vertical members connecting said top and bottom members,

(b) a waterproof tank generally corresponding in size and shape to said frame mounted within said frame,
(c) said tank being formed with an opening at the top thereof adjacent one end thereof,
(d) roller means mounted to the bottom of said frame and supporting said cart for free rolling movement, and
(e) a flat horizontally disposed tray substantially coextensive with said top frame member and mounted to said top member for limited sliding movement relative thereto,
(f) said tray being adapted to support kidney dialysis equipment and in one position said tray covering said tank opening and in another position said tray exposing said tank opening,



(g) said top frame member including a pair of parallel rails, one fixed horizontally along each side of said top member and said tray includes a plurality of wheels mounted to said tray and engaging said rails,
(h) said tray including a pair of parallel depending panels extending longitudinally along each side thereof and supporting said wheels, and,
(i) a plurality of inwardly extending stop members mounted to said panel projecting under said rails and engageable with said vertical frame members at either extreme position of said tray, said stop members being spaced apart to limit the travel of said tray from a closed position fully over said top frame member to an open position exposing said tank opening.

3,868,155
FOLDABLE AND STORABLE ENCLOSURE
Albert E. Cherubini, 766 Radian Dr., Heath, Ohio 43055
Filed Dec. 13, 1973, Ser. No. 424,293
Int. Cl. A47g *19/30*
U.S. Cl. 312—284 **8 Claims**



1. A foldable frame for a table cover and the like comprising: left and right generally U-shaped base sections positioned with their legs extending toward and spaced from each other; front and rear center base bars with respective ends of each center bar pivotally connected to the ends of respective front and rear legs of said left and right U-shaped base sections; first, second, third and fourth inverted bows with the lower ends of the first bow being pinned to respective legs of said left U-shaped base section, with the lower ends of said fourth bow being pinned to respective legs of said right U-shaped base section, and with the front and rear lower ends of said second and third bows being pivotally connected to said base members adjacent said pivotal connections at the left and right ends of respective front and rear center frame bars; and whereby said frame can be folded to occupy a minimum of space by folding said first and fourth hoops inwardly, said second and third hoops outwardly, and said base into a collapsed Z-shape with the left and right end frame sections closely adjacent each other.

3,868,156
ROTARY CABINET ASSEMBLY
Robert J. Vander Ley, Jenison, Mich., assignor to Lescoa, Inc., Grand Rapids, Mich.
Filed Apr. 30, 1973, Ser. No. 355,964
Int. Cl. A47b *49/00*
U.S. Cl. 312—238 **1 Claim**

1. A rotary shelf and closure panel assembly for use in a corner structure having top and bottom panels and means defining two vertical faces of said structure extending between said upper and lower panels and at right angles to one another, each of said faces having an opening extending from the line of intersection of said faces and said means including upper and lower frontal components extending, respectively, across the upper and lower edges of said openings and projecting, respectively, below said top panel and above said bottom panel, comprising:
a pair of closure panels secured to each other along one edge and extending at right angles to one another, said panels substantially filling said openings;
a journal bracket secured to said closure panels adjacent the upper edges thereof and projecting therefrom along the bisector of the angle formed by said closure panels;
a first pin slidably carried by said journal bracket and projecting upwardly therefrom;
spring means biasing said first pin upwardly;
an upper bearing bracket having a base portion adapted for flush engagement with the underside of said top panel, one edge of said base portion being provided with a V-notch for engagement with said upper frontal components whereby said upper bearing bracket is precisely located relative to said openings, said upper bearing bracket also having a downwardly projecting truncated concial portion the lower end of which has a hole for receiving the upper end of said first pin and providing a bearing therefor;
a shelf assembly secured to said closure panels adjacent the lower edges thereof, said shelf assembly including upper and lower plates secured to one another at the edges thereof and spaced from one another at their center portions, the center portion of the lower one of said plates having an opening therein in vertical alignment with the axis of said fisrt pin, said lower plate having a pair of upturned flanges bearing against said closure panels, said upper plate having a pair of upturned flanges overlying said flanges of said lower plate, said shelf assembly in-

cluding fastener means securing said flanges to one another and to said closure panels;

a lower bearing bracket having a base portion adapted for flush engagement with the upper surface of said lower panel of said cabinet structure, one edge of said base portion being provided with a V-notch for engagement with said lower frontal components whereby said lower bearing bracket is precisely located relative to said opening, said lower bearing bracket also including a bearing block projecting upwardly from said base portion and having a vertically extending hole aligned with the vertical axis of said first pin when said bearing brackets are in their mounted positions and a camming surface on the upper end thereof;

a second pin having a lower portion of a first diameter adapted for sliding and rotating engagement with said hole in said bearing block, an intermediate portion of enlarged diameter, the lower surface of which includes a camming portion cooperating with camming surface of said bearing block and an upper surface engaging the underside of the center portion of said lower plate of said shelf assembly, and an upper portion of lesser diameter than that of said intermediate portion, said upper portion extending through said hole in said lower plate of said shelf assembly and engaging the underside of said upper plate of said shelf assembly; and

means to secure said second pin in non-rotating relation to said shelf assembly.

3,868,157

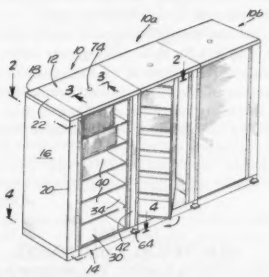
ROTARY FILING CABINET

Gerard A. Robinson, 1928 Galerita Dr., San Pedro, Calif. 90732

Continuation-in-part of Ser. No. 186,124, Oct. 4, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,909

Int. Cl. A47b *46/00*

U.S. Cl. 312—305 **12 Claims**



8. A file apparatus comprising a cabinet having a rotor including support platform shelf means, latch means for the rotor comprising a foot operated member and a latch member, said latch member being resiliently mounted mechanism comprising spring means positioned to be actuatable by movement of the latch member in one direction to compress the spring means and by movement of the latch member in the opposite direction, to compress the spring means.

3,868,158

MODULE RACK FOR CONNECTION BOXES OF PRINTED-CIRCUIT CARDS

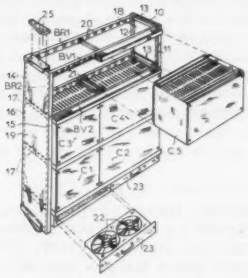
Bernard Andre Laboue, Paris, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed May 14, 1973, Ser. No. 360,221

Claims priority, application France, May 17, 1972, 72.17609

Int. Cl. A47f *5/10*; **A47b** *87/02*

U.S. Cl. 312—350 **6 Claims**



1. An improved module rack for mounting a plurality of connection boxes that may be of non-uniform widths, and that may have lower lateral edges which protrude below the lower faces of the boxes, comprising:

two vertical side plates which are disposed parallel to but spaced from each other, each of the vertical side plates having a front edge and a rear edge;

a set of front bars, each of which having a length equal to the distance between the two vertical side plates and which extend between the two vertical side plates, with the ends of each of the front bars being fastened to the front edges of the two vertical side plates such that the front bars are substantially parallel to each other and are substantially perpendicular to the two vertical side plates; a set of rear bars, each of which having a length equal to the distance between the two vertical side plates and which extends between the two vertical side plates, with the ends of each of the rear bars being fastened to the rear edges of the two vertical side plates such that the rear bars are substantially parallel to each other and are substantially perpendicular to the two vertical side plates and with the number of rear bars in the set of rear bars being equal to the number of front bars in the set of front bars, each of the front bars being associated with one of the rear bars so as to form a pair of bars and so that the planes defined by these pairs of front and rear bars are substantially perpendicular to the two vertical side plates and are substantially parallel to the horizontal;

a plurality of slideways, each adapted to be removably mounted between front and rear bars of a pair of bars, each having a front end, a rear end and body portion which extends between the front and rear ends and each having a length substantially equal to the distance between the front and rear bars of a pair of bars; each slideway also including a groove which extends parallel to the longitudinal axis of the slideway and which has a width slightly larger than twice of the thickness of the lower lateral edge of the connection boxes so that the adjoining lower lateral edges of two adjacent connection boxes can fit within the groove when the two connection boxes are placed side by side in the module rack;

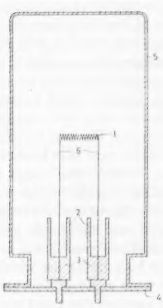
means for mounting the slideways to and between the front and rear bars of a pair of bars, the mounting means including: a first series of identical, first openings formed in the front and rear bars and regularly spaced along lines parallel to the longitudinal axes of the front and rear bars;

at least one second opening formed in each of the front ends of the slideways; at least one second opening formed in each of the rear ends of the slideways, with the second openings in the front ends of the slideways being identical to the second openings in the rear ends of the slideways; and fastening means adapted to cooperate with aligned first and second openings in an adjacent bar and end of a slideway so as to prevent relative movement therebetween, one of the first and second openings having an oblong shape, with the major axes of these oblong shaped openings being parallel to the longitudinal axes of the front and rear bars of a pair of bars and the other of the openings having a circular shape, the first openings being spaced along the bars so that regardless of the position of the ends of a slideway along the bars, a first opening and a second opening will always be aligned so that a fastening means can cooperate with these aligned first and second openings to prevent relative movement therebetween.

3,868,159
METHOD OF MANUFACTURING AN ELECTRIC INCANDESCENT LAMP HAVING A LONGER LIFETIME AND/OR A HIGHER LIGHT OUTPUT

Erhard Kauer; Johann Schroder, both of Aachen, and Horst Horster, Roetgen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 13, 1973, Ser. No. 369,552
Claims priority, application Germany, June 28, 1972, 2231520
Int. Cl. H01j *9/00*
U.S. Cl. 316—1 7 Claims

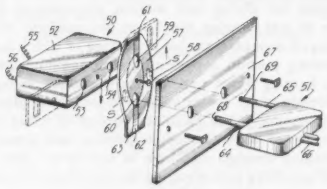


1. A method of manufacturing a gas-filled electric incandescent lamp, particularly a low-voltage incandescent lamp in which the wire diameter of the filament body consisting of a coiled tungsten wire varies in different axial sections of said coil, said diameter being reduced at the end turns and increased in the middle with the aid of a chemical cycle process either before or after mounting in the lamp so as to reduce the temperature differences between the turns in the middle and at the end of the filament during operation of the lamp at the prescribed operating voltage, said method comprises mounting said filament and in an atmosphere comprising a gas which is reactive with respect to tungsten and pre-operating said filament until the temperature T_1 of the end turns of the filament is 20 to 120°K lower than the temperature T_2 of the central turns.

3,868,160
PROTECTIVE ELECTRIC COUPLING

Jorge Eduardo Kersman, 1160 L.M. Campos St., Buenos Aires, Argentina

Filed Sept. 25, 1972, Ser. No. 292,163
Claims priority, application Argentina, Oct. 14, 1971, 238478; Jan. 26, 1972, 240237
Int. Cl. H01r *13/44*
U.S. Cl. 339—12 R 9 Claims



1. A protective electric coupling comprising:
a first coupler provided with at least one concealed first electrical connector adapted to be tied to a source of electrical energy;
a second coupler complementary to said first coupler provided with a second electrical connector adapted to be tied to a load, said second connector being matingly engageable with said first connector through an access opening in said first coupler upon operative interengagement of said couplers;
safety means in said first coupler for preventing the energization of an extraneous object other than said second connector introduced through said access opening into contact with said first connector; and
coacting first and second magnetic means on said first and second couplers for deactivating said safety means upon incipient interengagement of said couplers to facilitate energization of the load via said connectors, said safety means including mechanism effective prior to deactivation thereof for inhibiting full operative interengagement of said couplers.

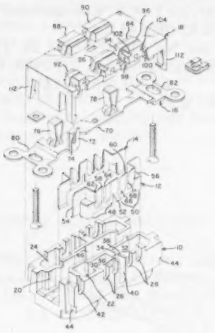
3,868,161
ELECTRICAL COMPONENT

Robert Houston Frantz, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 1, 1973, Ser. No. 402,549
Int. Cl. H01r *3/06*, *9/06*
U.S. Cl. 339—14 R 15 Claims

1. An improved electrical component comprising:
a housing of insulating material having at least one cavity therein;
at least one contact member received in said cavity of said housing and having at least one pair of spaced tines defining a wire engaging slot therebetween;
a back cover including means detachably securing said back cover to said housing, at least one wire carrying member integrally connected to said back cover by flexible straps, said wire carrying member having therein at least one bore and a transverse groove intersecting said bore.

whereby wire inserted in said bore is carried into engagement with said tines as said wire carrying member is



moved towards said cavity with respect to said back cover.

3,868,162

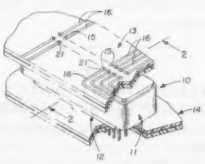
ELECTRICAL CONNECTOR

John Preston Ammon, Dallas, Tex., assignor to Elfab Corporation, Dallas, Tex.

Filed Sept. 4, 1973, Ser. No. 393,787

Int. Cl. H05k *1/07;* **H01r** *13/64*

U.S. Cl. 339—17 M **13 Claims**



1. An electrical connector including interengagable receptacle and plug members, comprising:

first and second substrates having aligned contact receiving hole arrays therein, each of said hole arrays lying along a linear path;

a plurality of contacts press fitted into the holes in each of said substrates, said contacts each including a contactor portion resilient in a direction transverse to said linear paths lying along said hole arrays;

an insulative receptacle housing placed down over to substantially enclose the press fitted contacts on the first substrate, said receptacle housing having bottom openings of sufficient size to receive the contactor portions of said contacts and a top opening to receive a plug member, said receptacle housing having substantially planar inner wall surfaces extending parallel to said linear paths lying along said hole arrays and spaced from any engagement with the rear portions of said receptacle contacts; and

an insulative plug housing placed down over to substantially enclose the press fitted contacts on the second substrate, said plug housing having bottom openings of sufficient size to receive the contactor portions of said contacts, and a top opening surrounding a central rib, said central rib having substantially planar inner wall surfaces extending parallel to said linear paths lying along said hole arrays and spaced from any engagement with the rear portions of said plug contacts, said plug and receptacle members being interengagable by inserting the central rib of said plug into the top opening of said receptacle to receive the receptacle housing into the top opening of said plug housing and bring the respective plug and receptacle contacts into generally parallel, facing electrical engagement along a line parallel to said linear hole arrays and spaced from the inner wall surfaces of both said plug and said receptacle housings with the forces of engagement between contacts being in a direction perpendicular to said line of engagement.

2. An electrical connector including interengagable receptacle and plug members so set forth in claim 1 wherein:

the contacts are press fitted into the first substrate in two parallel rows along said linear paths with the contactor portions of adjacent receptacle contacts in different rows, forming contact pairs, facing toward one another and spaced from the inner wall surfaces of said receptacle housing;

the contacts are press fitted into the second substrate in two parallel rows along said linear paths with the contactor portions of adjacent plug contacts in different rows forming contact pairs, facing away from one another and being separated by the central rib of said plug housing and spaced from the inner wall surfaces of said central rib; and

the contactor portions of said plug and receptacle contacts electrically connect one another when said plug and receptacle members are interengaged along a line parallel to said linear paths with forces of engagement being perpendicular to said paths.

3. An electrical connector including interengagable receptacle and plug members as set forth in claim 2 wherein:

each of said receptacle contacts are preloaded to exert a force toward the adjacent contacts in said pairs; and

each of said plug contacts are preloaded to exert a force away from the adjacent contacts in said pairs.

4. An electrical connector including interengagable receptacle and plug members as set forth in claim 3 wherein:

said contacts each include a flange portion at the upper end thereof;

said receptacle housing includes a pair of lip portions parallel to said linear paths lying along said hole arrays and spaced from one another on opposite sides of the top opening, said contact flanges engaging said lip portions to preload said receptacle contacts with forces acting in a direction perpendicular to said linear paths; and

said plug housing including a pair of lip portions extending on opposite sides of said central rib to engage the contact flanges and preload said plug contacts with forces acting in a direction perpendicular to said linear paths.

3,868,163

BUS BAR

Gordon G. Jarosek, Westminster, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Continuation of Ser. No. 221,905, Jan. 31, 1972, abandoned. This application July 23, 1973, Ser. No. 381,578

Claims priority, application Belgium, Jan. 31, 1972, 1127130; Denmark, Jan. 30, 1973, 491/73; Great Britain, Jan. 18, 1973, 2664/73; France, Jan. 31, 1973, 73.03353; Germany, Jan. 25, 1973, 2303537; Netherlands, Jan. 22, 1973, 7300894

Int. Cl. H01r *31/08*

U.S. Cl. 339—19 **10 Claims**

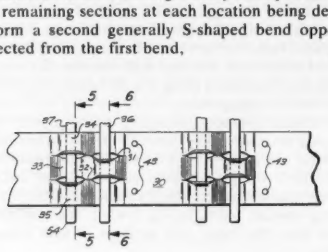
1. A strip of conductive material for interconnecting one pair of terminal pins to other pairs of terminal pins spaced given distances apart comprising:

at least one longitudinal slit at each location of a pair of terminal pins, all slits at each location being separated from all slits at each adjacent location and having a length

determined by the selected size of the terminal pins to be interconnected,

the slits at each location being separated from the slits at each adjacent location and dividing the strip at each location into one more section than there are slits at each location, alternate sections at each location being deformed to form a first generally S-shaped bend,

the remaining sections at each location being deformed to form a second generally S-shaped bend oppositely directed from the first bend,



the first and second bends being so positioned relative to each other to define together a pair of cooperating passages capable of receiving a pair of terminal pins of the given size and wherein the insertion of a pin of the given size causes a decrease in the adjacent opening of the pair of passages, and the slits being of a selected length to provide a force fit for each terminal pin of the pair when both terminal pins are inserted.

3,868,164

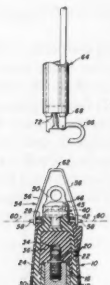
INSULATING RECEPTACLE WITH TEST POINT

Timothy A. Lisk, Washington, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,741

Int. Cl. H01r *11/18*

U.S. Cl. 339—59 R **10 Claims**



1. In a receptacle for installation on a high voltage bushing, the receptacle having a longitudinally extending body, a bail, a test point and a test point cap covering the test point, which receptacle is installed and removed by means of a hot-stick having a hook at one end thereof, the improvement comprising:

laterally extending pivot means affixed to the body and the bail such that the bail may be moved about a lateral axis provided by the pivot means;

the test point cap having hook-receiving means positioned relative to the bail such that the hook-receiving means and the bail will be captured simultaneously by the hot-stick hook to thereby enable the test point cap to be removed and pivoted away from the test point to permit an electrical measurement to be made at the test point.

3,868,165

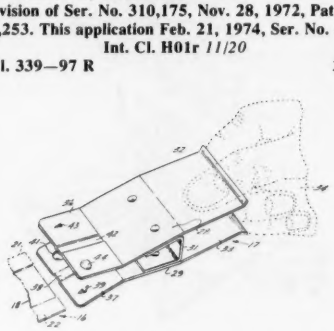
CLAMP FOR A PASSIVE ELECTRODE

Donald I. Gonser, c/o F. & F. Koenigkramer Co. 96 Caldwell Dr., Forest Park, Ohio 45216

Division of Ser. No. 310,175, Nov. 28, 1972, Pat. No. 3,817,253. This application Feb. 21, 1974, Ser. No. 444,314

Int. Cl. H01r *11/20*

U.S. Cl. 339—97 R **2 Claims**



1. A clamp for a passive electrode which comprises a pair of clamping arms, means for urging end portions of said arms together, spaced electrode holding prongs on sections of said arms and adapted to perforate reinforcing strips of a passive electrode to hold the clamp on the passive electrode, a socket opposed to each prong in the end portion opposed thereto for receiving the prong, and contact sections on the arms spaced between the prong carrying sections, sections of the clamping arms surrounding the sockets being further spaced from the sections of the clamping arms surrounding opposed prongs than the contact sections are spaced when the clamping arms are closed on the passive electrode, whereby the contact sections are adapted to grip a metal foil section of the electrode between the reinforcing strips to make an electrical connection therewith.

3,868,166

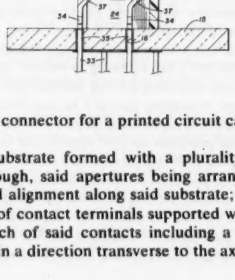
PRINTED CIRCUIT BOARD CONNECTOR HAVING CONTACTS ARRANGED IN A STAGGERED GRID ARRAY

John Preston Ammon, Dallas, Tex., assignor to Elfab Corporation, Dallas, Tex.

Filed July 16, 1973, Ser. No. 379,640

Int. Cl. H05k *1/07*

U.S. Cl. 339—176 MP **8 Claims**



1. An edge connector for a printed circuit card which comprises:

a planar substrate formed with a plurality of apertures therethrough, said apertures being arranged in pairs in staggered alignment along said substrate;

a plurality of contact terminals supported within said apertures, each of said contacts including a bowed portion resilient in a direction transverse to the axis of the associ-

ated aperture and spaced therefrom by an offset portion, said contacts associated with each pair of apertures being arranged with the bowed portions thereof in closely spaced facing relationship; and

an insulative housing substantially enclosing said contacts and including a pair of parallel, longitudinal sidewalls, each formed with a plurality of recesses for receiving the offset portions of selected ones of said contacts and a plurality of transversely extending wall sections separating each contact pair, adjacent ones of said wall sections being frictionally engageable with selected others of said contacts for frictionally retaining said housing in enclosing relationship with said contacts.

3,868,167

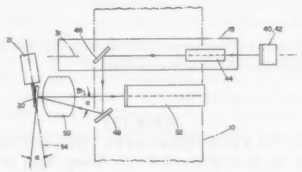
ELECTRO-OPTICAL COMMUNICATION OF VISUAL IMAGES

William F. Schreiber, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 15, 1973, Ser. No. 323,757

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **12 Claims**



1. In transmitting or receiving apparatus for use in electro-optical communication of visual images such as photographs, documents, or the like, said apparatus including a light source, circuitry for carrying electric signals corresponding to the modulation of said light source, means defining a field to be scanned, and an optical system for causing a light beam from said source to focus upon and scan said field, said optical system including a substantially flat reflector movable about a scanning axis to effect said scanning, the focus of beam positions of light reflected from said reflector upon movement about said axis defining a scanning surface having an intersection with said field to define a scan line, that improvement comprising

arrangement of said source and said optical system so that said light beam is incident upon said reflector along a path forming an acute angle with said scanning surface, and

arrangement of said reflector and said means defining said field so that said axis is tilted with respect to the surface of said reflector and toward said scanning surface from the side thereof on which said beam is incident upon said reflector, said axis being so tilted at an angle relative to said reflector surface substantially equal to said acute angle, said axis thereby forming an angle of less than 90° with said scanning surface, said arrangement producing a predetermined approximation of planarity of said scanning surface and a corresponding predetermined approximation of straightness of said scan line independent of the angle through which said reflector is moved about said scanning axis.

3,868,168

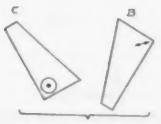
COMBINATION OF BIREFRINGENT ELEMENTS FOR POLARIZING INTERFERENTIAL SYSTEMS

Johannes D. De Veer, Harvard, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 16, 1973, Ser. No. 324,456

Int. Cl. G02b *21/06*

U.S. Cl. 350—12 **9 Claims**



1. In a polarizing interferential system having a light source, a polarizer, a compensator element, an object, a beam splitter element and an analyzer, all in alignment along a center line, the improvement comprising said compensator element being a single birefringent crystalline first wedge having two converging planar surfaces intersecting the center line, said wedge having an optic axis, said beam splitter being a single birefringent crystalline second wedge having two converging planar surfaces intersecting the center line, said second wedge having an optic axis, and said wedges being arranged to have at least three of the combination of said planar surfaces and optic axes oblique to the center line.

3,868,169

OBSERVATION PERISCOPE WHICH CAN BE COMBINED WITH A LASER DEVICE

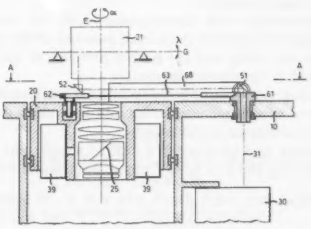
Heinz Pfenninger, Rumlang, and Waldemar Strietzel, St. Gallen, both of Switzerland, assignors to Contraves AG, Zurich, Switzerland

Filed Feb. 9, 1973, Ser. No. 330,991

Claims priority, application Switzerland, Feb. 28, 1972, 2766/72

Int. Cl. G02b *23/08*

U.S. Cl. 350—26 **8 Claims**

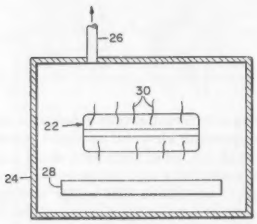


1. An observation periscope arrangement equipped with a periscope objective and capable of being combined with a laser distance-measuring device, comprising a periscope objective having an optical axis, a periscope support for mounting said periscope objective, mirror means having an elevational axis and disposed forwardly of the periscope objective, means mounting at least said mirror means to be rotatable about the optical axis of the periscope objective and relative to the periscope support and pivotable about said elevational axis of said mirror means, two mirrors cooperating with said mirror means, and means for aligning said two mirrors relative to one another for introducing a laser beam between the periscope objective and the forwardly arranged mirror means and into the latter.

3,868,170
METHOD OF REMOVING ENTRAPPED GAS AND/OR RESIDUAL WATER FROM GLASS

Robert D. DeLuca, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,746
Int. Cl. G02g 5/14; C03c 15/00
U.S. Cl. 350—96 WG 24 Claims



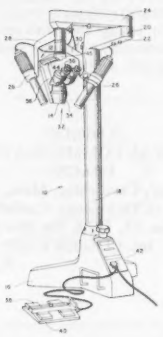
1. The method of forming an article comprising the steps of providing a suitable starting member,
forming glass soot by flame hydrolysis,
depositing a quantity of said glass soot on said starting member to form a porous body thereof,
disposing said porous body in a controlled environment,
maintaining a predetermined desired concentration of gases in said environment,
heating said porous body to a temperature below the sintering temperature of said glass to permit entrapped gas to escape therefrom,
maintaining said temperature until an equilibrium is reached between the partial pressure of the entrapped gas in said body and the partial pressure of the same gas in said environment, thereafter
heating said porous body to at least the sintering temperature of said glass to sinter said soot particles and form a consolidated dense member,
forming said member to a desired shape, and
removing the article so formed from said environment.

3,868,171
SURGICAL MICROSCOPE

Josef K. Hoppl, Bavaria, Germany, assignor to J. K. Hoppl Corporation, North Amityville, Long Island, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,812
Int. Cl. G02b 21/20
U.S. Cl. 350—85 11 Claims

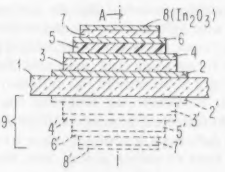
1. In a surgical microscope of the type comprising a base member, a cantilever arm mounted on said base member, and objective and eyepiece lens means, a mount to tiltably connect said objective and eyepiece lens means to said cantilever arm which comprises, track means connected to said cantilever arm, follower means slidably received in said track means, said objective and eyepiece lens means connected to said follower means, and means to move said follower means with respect to said track means, said track means and said follower means cooperating such that a field of view of the objective lens means remains in focus throughout the entire range of movement of the follower means.



3,868,172
MULTI-LAYER FERROELECTRIC APPARATUS

Lawrence B. Ii, and David C. T. Shang, both of Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1973, Ser. No. 371,224
Int. Cl. G02f 1/26
U.S. Cl. 350—150 8 Claims

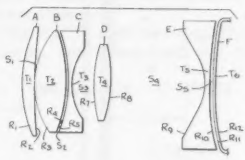


1. Ferroelectric optical apparatus adapted to transmit incident polarized light therethrough in a given direction, said apparatus comprising:
a plurality of superimposed ferroelectric layers, each of said ferroelectric layers having first and second planar opposing sides transverse to said direction,
at least one conductive member means disposed on each said first and second sides of each said ferroelectric layer, and
means coupled to said conductive member means for selectively energizing said ferroelectric layers to provide said apparatus with a selectable and variable spectral bandpass characteristic.

3,868,173
OBJECTIVE LENS ASSEMBLY FOR PROJECTION TELEVISION

John R. Miles, and Grant M. Miles, both of Glenview, Ill., assignors to Maris Ambatis; Thomas D. Shannon and Walter J. DeMaria, New York, N.Y.

Filed Jan. 18, 1973, Ser. No. 324,845
Int. Cl. G02b 9/60
U.S. Cl. 350—215 6 Claims

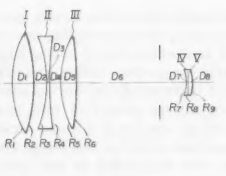


I. A high-speed objective lens assembly adapted to project the image appearing on the screen of a television display tube onto a remote screen, said assembly comprising at least five lens elements formed of transparent thermoplastic material having a high order of light permeability, wherein the first lens element is concave-convex, the second lens element is double convex, the third lens element is double concave, the fourth lens element is double convex, and the fifth lens element which is adjacent said screen is double concave, said assembly having a speed of at least f: 1.5, the air space between the fourth and fifth lens elements being more than twice as great as the air space between the third and fourth lens elements.

3,868,174
TELEPHOTO TYPE OBJECTIVE OF LARGE RELATIVE APERTURE RATIO

Hideo Yakota, Tokyo, Japan, assignor to Canon Kobushiki Kaisha, Tokyo, Japan

Filed July 24, 1973, Ser. No. 382,284
Claims priority, application Japan, Aug. 3, 1972, 47-77308
Int. Cl. G02b 9/60, 1/00, 9/34
U.S. Cl. 350—216 3 Claims

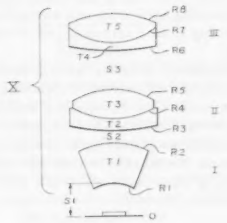


I. A telephoto type objective lens, having a large relative aperture ratio, comprising a front lens group of positive refractive power and a rear lens group of negative refractive power; said front lens group including, in sequence from front to rear and in spaced relation to each other, a biconvex single lens, a biconcave single lens and a positive single lens; said biconvex single lens being a fluorspar; said rear lens group including in sequence and in alternation a negative lens and a positive lens.

3,868,175
FORTY POWER MICROSCOPE OBJECTIVE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed July 9, 1973, Ser. No. 377,870
Int. Cl. G02b 9/12
U.S. Cl. 350—225 2 Claims



I. A three component microscope objective comprising a positive concavo-convex lens as the first component (I), a double convex positive doublet (II) as the second component and a double convex positive doublet (III) as the third component having a magnification of 40× and a numerical aperture of approximately 0.66 wherein the parameters of radii (R), lens thicknesses (T), axial spaces along lens element and object plane (S), refractive indices (ND), and Abbe Numbers (ν), are determined by the following relationship:

		Radius R	Thickness T	Space S	Refractive Index ND	Abbe Number ν
				S_1= .1566F		
I	r_1=	−.6155F	T_1=.7637F		ND_1=1.69669	ν_1=56.13
	R_2=	−.6604F		S_2= .0467F		
	r_3=	4.3553F				
II	R_4=	1.2850F	T_2=.3273F		ND_2=1.78446	ν_2=25.75
	R_5=	−1.7914F	T_3=.6546F		ND_3=1.69669	ν_3=56.13
	R_6=	9.2148F		S_3=1.2152F		
III	r_7=	1.3725F	T_4=.3273F		ND_4=1.78161	ν_4=37.08
	R_8=	−3.3821F	T_5=.6546F		ND_5=1.50129	ν_5=56.39

wherein scalar values are given in millimeters.

3,868,176
POWERED ADJUSTABLE REAR VIEW MIRROR FOR A TRUCK TRAILER

David E. Young, Rt. 2, Box 133, South Point, Ohio 45680

Filed Dec. 5, 1973, Ser. No. 421,768
Int. Cl. G02b 5/08
U.S. Cl. 350—289 1 Claim

I. A truck mirror intended for attachment to the front end of a trailer body to provide rear view vision to a driver seated in a compartment of a tractor cab pulling the trailer so as to be able to see along the otherwise hidden side of the trailer to the back end of the trailer while backing the trailer and without having to leave the tractor cab, the truck mirror comprising:

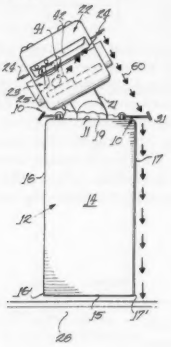
a pair of vertically spaced apart brackets adapted to be mounted to the front end of a trailer body adjacent a side edge thereof, each bracket being of a U-shaped configuration having a flat base member adapted to be mounted to the front end wall of said trailer, and a pair of vertically spaced apart horizontally outwardly projecting arm portions;

a U-shaped supporting structure including a vertically disposed rod shaped bight forming base member and a pair of depending horizontally disposed leg members;

pivot means pivotally connecting the free terminal end of each leg member to an associated one of said brackets between said bracket arms for swinging movement relative thereto, each terminal end of each leg member being pivotally attached to said associated bracket intermediate said bracket arms by a vertically extending pivot pin interconnecting said arms and extending through a suitable opening in said terminal end of said associated leg member;

a mirror adjustably mounted to said base member for adjustable rotative movement thereabout;

a gear member having the terminal end portion of one of said legs diametrically secured in juxtaposition thereto for movement therewith, said gear pivotally mounted by said pivot means for rotative movement about its axis, said gear having gear teeth disposed about the peripheral circumference thereof;



an electrically powered direct current motor having a toothed gear wheel mounted concentric on the motor shaft with its teeth in driving engagement with the teeth of the first mentioned gear to effect the selective rotation of said gear in opposite directions about its axis to effect the simultaneous movement of the mirror support member between an inoperative storage position inwardly of the trailer front end and an operative position wherein the mirror projects outwardly of the associated side of the trailer;

electrical wiring means to interconnect said motor to a source of electrical energy;

switch control means in the form of a double pole double throw toggle actuated switch interposed intermediate said motor and said source of electrical energy and adapted to selectively control both the energization and de-energization of said motor as well as controlling the direction of rotation of said motor; and

said source of electrical energy is in the form of a direct current battery such that the control switch effects the reversal of battery polarity as applied to the motor for controlling the reversing operations of the motor.

3,868,177
CAMPING SET

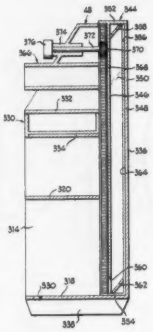
Marvin I. Glass, Chicago, and Palmer J. Schoenfield, Evanston, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 333,745
Int. Cl. G02b *5/08*
U.S. Cl. 350—301 **3 Claims**

1. A combination toy camping pack and observation device, comprising:

a pack construction having at least one compartment for receiving supplies or the like, and a support frame for the pack; and

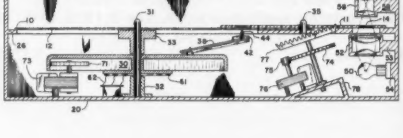
an elongated periscope device mounted on said frame for reciprocal movement relative thereto, said periscope device including a one-piece tube having an upper observation window and a lower observation window, said tube being movable between a lowered vision blocking retracted position substantially co-extensive with said pack and a raised upper position wherein said tube protrudes above the pack permitting visual observation through the lower observation window.



3,868,178
AUDIOVISUAL SYSTEM

Panayotis C. Dimitracopoulos, Lyford Cay, P.O. Box N-7776, Nassau, Bahamas

Filed Oct. 11, 1973, Ser. No. 405,700
Int. Cl. G03b *31/06, 23/10, 21/00*
U.S. Cl. 353—19 **29 Claims**



1. An audiovisual information device comprising at least two distinct recording media, including one sound-record and one image-disc, said sound-record having a spiral sound track thereon and said image-disc having a series of projectable images disposed substantially within an annular region substantially coaxial to the center of said image-disc, means mounting said image disc on said sound-record for rotational movement about said center of said image disc, said center of said image-disc and the center of said spiral being radially spaced-apart a distance which causes said image-disc and said spiral track to overlap.

13. An audiovisual apparatus accepting for audiovisual reproduction an audiovisual information device comprising one sound record having a spiral sound track and, at a distance radially away from the center of said spiral, bearingly supporting for rotation thereon, an image-disc having a series of projectable images disposed within an annular region coaxial to its center of rotation; said apparatus including:

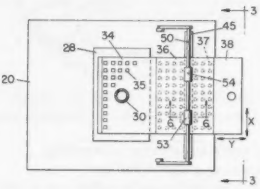
a. a rotating transducer which engages and follows said track in a sound-scanning relationship;

b. optical projection means directed onto at least one of said images to optically scan and retrieve therefrom the imaging information contained therein;
c. spindle means, whose axis is at a distance away from the center of rotation of said transducer, engaging said image-disc at its said center of rotation;
d. record-supporting means supporting said sound record but leaving said track exposed to said rotating transducer.

3,868,179
MICROFORM POSITIONING APPARATUS

Heinz Zeutschel, Tubingen, Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 2, 1973, Ser. No. 347,337
Claims priority, application Germany, Aug. 14, 1972, 2234052
Int. Cl. G03b *21/11, 23/08*
U.S. Cl. 353—27 **6 Claims**

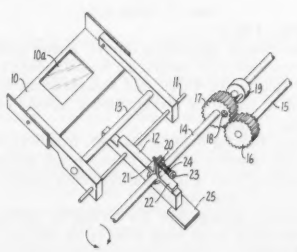


1. Apparatus for positioning a microform in a reader, comprising a
plate member connected with and carrying said microform in planar extended relationship thereto, said plate member including a plurality of embossed projections in an arrangement corresponding to images on the microform, and an
elongated member secured to said reader and having a groove therealong operably associated to receive a plurality of said projections for arresting movement of said plate member in one direction and for permitting sliding movement in the other direction.

3,868,180
TAPE CLAMP MECHANISM FOR MICROFILM READER

Lyle Gilbert Priest, Palo Alto, Calif., assignor to Information Design, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 268,094, June 30, 1972, abandoned. This application Aug. 9, 1972, Ser. No. 279,243
Int. Cl. G03b *1/48*
U.S. Cl. 353—95 **5 Claims**

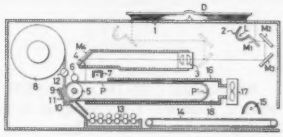


1. A clamp mechanism for microfilm readers and the like having a film gate, a film drive, and means responsive to operation of the film drive for actuating the film gate to clamp or release a film strip, comprising: a pivoted rocker arm engagable with the film gate, a spindle, means drivingly connecting said spindle to said film drive with lost motion, and contact means frictionally engaged with said spindle for pivoting said pivoted rocker arm upon rotation of said spindle in either clockwise or counterclockwise directions, said contact means being positioned to contact said pivoted rocker arm and apply a pivotal force at two points of leverage on said rocker arm, one point of leverage being made by a clockwise rotation and the other point of leverage being made by a counterclockwise rotation, whereby rotation of said spindle pivots said pivoted rocker arm to actuate said film gate.

3,868,181
APPARATUS FOR DRIVING PHOTOSENSITIVE ELEMENT IN ELECTROPHOTOGRAPHIC COPIER OF IMAGE TRANSFER TYPE

Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1973, Ser. No. 334,532
Claims priority, application Japan, Mar. 7, 1972, 47-27584
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **6 Claims**



1. In an electrophotographic copier of the image transfer type, a drive roller rotatable about a transverse axis, a suction box extending longitudinally relative to said drive roller and having in an end thereof proximate said drive roller an opening longitudinally spaced from and facing said drive roller, exhaust means communicating with said suction box at a point in said box spaced longitudinally inwardly of said end opening, and an endless belt having a photosensitive outer face and constrained to move in a path having longitudinal forward and return runs joined at opposite ends by respective first and second longitudinally spaced transverse end runs, said first transverse end run extending around said drive roller and said second transverse end run and a part of said longitudinal forward and return runs being disposed in said suction box so that the belt is tensioned under the influence of the reduced pressure therein, said suction box including opposite walls extending along the outer faces of said belt longitudinal runs and said walls having their inside faces lined with relatively soft webs engaging said belt outer faces in said suction box.

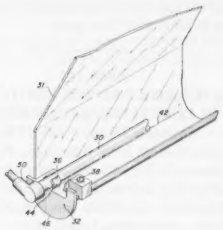
3,868,182
LAMP ASSEMBLY

Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,446
Int. Cl. G03b *27/54*
U.S. Cl. 355—67 **3 Claims**

1. A lamp assembly for flash illuminating a document to be reproduced on a xerographic machine comprising:
a reflector;
dielectric clamp means provided at each end of said reflector for engagement therewith, said clamp means including resilient lamp tube retaining means,
a tubular lamp, having electrical contact surfaces at each end thereof said tubular lamp being retained in said clamp means, in a predetermined position relative to said reflector by said resilient means, the ends of said lamp extending beyond said clamp means, said lamp being

adapted for connection at each end thereof to a source of electrical power, the electrical contact surfaces of said lamp being spaced from said clamp means and said reflector to prevent arcing therebetween; and,



a trigger wire positioned along side said lamp parallel to the axis thereof, said wire being located and retained against said tubular lamp between said resilient means and said lamp.

3,868,183

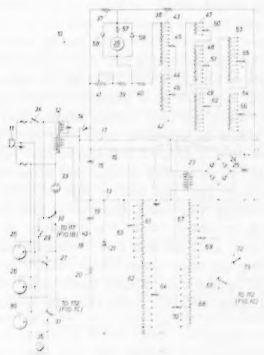
EXPOSURE CONTROL SYSTEM

Warren Childers, Houston, Tex., assignor to Graphic Arts Manufacturing Co., Inc., Houston, Tex.

Filed July 16, 1973, Ser. No. 379,608

Int. Cl. G03b *27/76*

U.S. Cl. 355—68 **16 Claims**



1. An apparatus for controlling the exposure of a photographic medium to accept an image source which has shadow tones and highlight density values which differ from one another through the use of a screen having a given screen range, comprising:

computing means for receiving multiple inputs representative of at least two of three variables which are highlight density, shadow tone density, and screen range, said means determining the remaining of said variables from the two variables input thereto and relating an exposure time to the value of the variables; and,

first means connected to said computing means for controlling the integral of light exposure of a photographic medium in response to the variables supplied thereto.

3,868,184

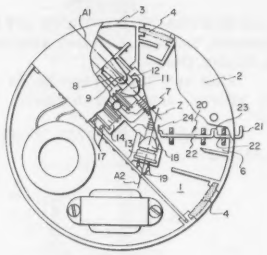
OPTICAL SMOKE DETECTOR WITH LIGHT SCATTERING TEST DEVICE

Angelo August Marsocci, West Warwick, R.I., assignor to Electro Signal Lab, Inc., Rockland, Mass.

Filed July 25, 1973, Ser. No. 382,521

Int. Cl. G01n *21/00, 21/12*

U.S. Cl. 356—103 **5 Claims**



1. An opticle particle detector comprising:

a housing enclosing a dark chamber;

a lamp mounted on the housing and means to direct light on a confined path into the chamber;

a photosensitive device on the housing viewing the light path and responsive to light scattered by particles in the light path; and

a particle simulating member having a light scattering surface of predetermined width and of extent at least substantially as great as the cross section of the light beam, the member being mounted on the housing for continuous, unobstructed movement through positions in the light beam to and through a position of predetermined light scatter without selection of the position by the operator, so that during such movement a calibrated intensity of light will be scattered to the device.

3,868,185

ASYMMETRIC MICHELSON INTERFEROMETER FOR SOLID STATE INFRA-RED SPECTROSCOPY

Ludwig Genzel, Freiburg, and Jurgen Gast, Lahr, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenshaften e.V., Gottingen, Germany

Filed Oct. 18, 1973, Ser. No. 407,503

Claims priority, application Germany, Oct. 18, 1972, 2251080

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 R **8 Claims**

1. An asymmetric Michelson interferometer comprising:

a radiation source for producing measurement beam;

a beam splitter on which said measurement beam is arranged to fall to be divided into a sample beam and a reference beam;

a sample holder for holding a sample from which said sample beam is reflected back to said beam splitter;

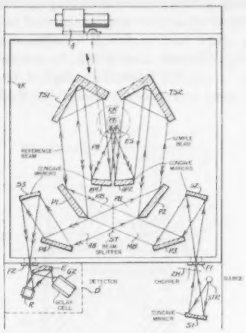
an end mirror from which said reference beam is reflected back to said beam splitter;

an adjustment arrangement for varying the optical length of the reference beam path relative to that of the sample beam path;

at least two concave mirrors of short focal length, each disposed in said reference beam path and said sample beam path respectively, and where said sample holder and said end mirror are close to one another and disposed at the focal points of each of said concave mirrors;

at least two reflector arrangements disposed between said beam splitter and said concave mirrors, for reflecting the

reference and sample beams parallel but laterally transposed and wherein said adjustment arrangement is capable of displacing at least one of said two reflectors in a direction parallel to said parallel beams.



3,868,186

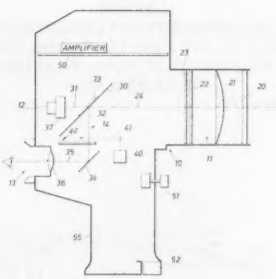
OPACITY METER

Thomas T. Paukert, Berkeley, and Eugene J. Rosa, El Cerrito, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 182,494, Sept. 21, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,623

Int. Cl. G01n *21/12, 21/20*

U.S. Cl. 356—207 **6 Claims**



1. A hand held opacity for measuring the light transmitted through a stack plume, said meter comprising:

a housing having grip means disposed to permit an observer to simultaneously hold and operate said opacity meter;

a lens system mounted in the housing to form a light transmission path having a first axis and disposed to limit the field of view of said opacity meter to less than 3°;

a fixed filter means mounted in the housing and disposed in the light transmission path on said first axis, said fixed filter being disposed to produce a spectrum of light that approximates that observed by the human eye;

a variable filter means mounted in the housing and disposed in the light transmission path on said first axis, said variable filter being manually adjustable to adjust the quantity of light transmitted along said transmission path to a predetermined value;

a light sensitive detector mounted in the housing and disposed in the light transmission path on said first axis, said detector being sized and positioned in said light transmission path to supply an output signal proportional to the light transmitted through the plume;

meter means coupled to said detector for displaying the magnitude of the detected signal; and

optical means mounted in the housing and disposed to permit an observer to simultaneously observe along a second axis parallel to said first axis and spaced therefrom said meter means and the stack plume through said lens system.

3,868,187

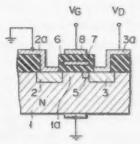
AVALANCHE INJECTION TYPE MOS MEMORY

Fujio Masuoka, Ebina, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 31, 1972, Ser. No. 285,225

Int. Cl. H01l *11/14*

U.S. Cl. 357—23 **5 Claims**



1. An avalanche injection type metal oxide semiconductor memory comprising:

a semiconductor substrate of one conductivity type and an electrode thereof;

source and drain regions spatially formed on one side of said semiconductor substrate with the opposite conductivity type to that of said semiconductor substrate and electrodes thereof;

a floating gate provided between said source and drain regions, said floating gate being surrounded by an insulating layer;

at least one auxiliary semiconductor region formed in the channel region of said semiconductor substrate so as to abut against only one of said source and drain regions with the same conductivity type as, but with higher concentrations of impurities than, said semiconductor substrate so as not to extend over the whole channel region; and

an external electrode impressed with voltage of different polarities at the time of write-in and erasure.

3,868,188

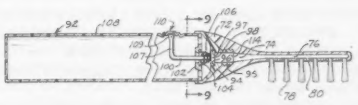
BRUSH WITH MATERIAL SUPPLY

Joseph A. Velardi, 8301 Arlington Blvd., Fairfax, Va. 22030

Filed June 15, 1973, Ser. No. 370,383

Int. Cl. A46b *11/02*

U.S. Cl. 401—190 **7 Claims**



1. A pressurized container for dispensing a viscous material through passages of a brush head to the region of bristles of the head comprising, in combination

wall means defining a sealed container having means defining a dispensing opening;

connector means for securing a brush head to the container in sealed relation to the dispensing opening;

a valve between the dispensing opening and a pressurized region of the container, the valve normally closing the dispensing opening;

a flexible section in a defined region of the wall means; and an actuator operably associated with said valve and extending to a location adjacent the flexible wall section,

the actuator being movable in response to manual movement of the resilient wall section to open the valve to permit controlled dispensing of material from the container to the dispensing opening and the bristles of a brush head secured to the container,

the resilient wall section including bellows means in the resilient wall section defining a manually operable button.

3,868,189

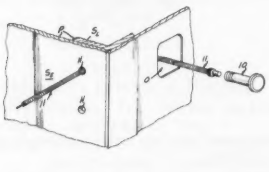
FASTENER ASSEMBLY

John O. King, Jr., 399 N. Ivy Rd., Atlanta, Ga. 30342

Continuation-in-part of Ser. No. 268,478, July 3, 1972,. This application Jan. 11, 1973, Ser. No. 322,799

Int. Cl. F16b *5/02, 29/00*

U.S. Cl. 403—12 **11 Claims**



1. An assembly for fastening together work pieces having aligned holes therethrough of a first prescribed diameter with one side of the work pieces having limited accessibility while the opposite side is easily accessible including:

a fastener having a head at one end, a support shank of a second prescribed diameter smaller than the first prescribed diameter and an engagement portion on the projecting end of said shank;

an elongate flexible guide member receivable through the holes and attachable to said fastener to be used to pull said fastener into said holes, engagement portion first, from the side of limited accessibility;

a sleeve member receivable over said support shank of said fastener and within the holes from the easily accessible side of the work pieces, said sleeve member dimensioned to fill the holes about said support shank; and,

an enlarged diameter section on said shank adjacent said head of a diameter substantially equal to said first prescribed diameter and a length substantially less than the total thickness of the work pieces to concentrically locate said smaller diameter portion of said shank within the holes when fastener is pulled into and seated within the holes.

3,868,190

MOUNTING ASSEMBLY FOR VEHICLE ROLLOVER PROTECTIVE SYSTEMS WITH PRELOADED CUSHIONING MEMBER

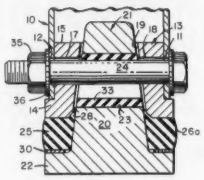
James C. Moore, Clackamas, Oreg., assignor to Portland Wire & Iron Works, Portland, Oreg.

Filed Oct. 16, 1972, Ser. No. 297,743

Int. Cl. F16b *9/02*

U.S. Cl. 403—189 **2 Claims**

1. A mounting assembly for securing a tubular frame member or column of a rollover protective system to a construction vehicle comprising: means at the base of said column providing a transverse aperture; a mount having a base welded to said vehicle, said mount and said column having a male-female interconnection with the male portion being an upright pedestal defining a transverse slot adapted to be aligned with said transverse aperture in said column; a sleeve received in the open bottom of said frame member and providing an interior bearing surface corresponding to and spaced at a clearance distance from the side surface of said pedestal and adapted to engage said pedestal to achieve metal-to-metal contact during rollover conditions; a resilient cushioning member with a central aperture adapted to surround said pedestal and being interposed between the base of said mount



and the base of said frame member when in assembled relation therewith; a bolt received in said aligned apertures; a resilient liner interposed between said bolt and said pedestal; preload means for inducing an adjustable amount of preload on said resilient cushion member by reaction of said bolt against the pedestal; said assembly being characterized in that said resilient cushioning member is preloaded to be compressed at least about one-eighth inch when said column is assembled to said pedestal.

3,868,191

MULTIPLE PIPE PULLING DEVICE

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343

Filed Nov. 19, 1973, Ser. No. 417,061

Int. Cl. F16g *11/04*

U.S. Cl. 403—216 **5 Claims**

1. A multiple pipe pulling device having in combination

a cylindrical housing,

a plurality of bores extending axially through said housing spaced circularly about the axis thereof,

a through bore extending through said housing, said bore being frusto-conical in form and intersecting said bores to gradually expose increasing portions of each of said bores from a point spaced inwardly of one end of said housing, a wedge member disposed in said through bore,

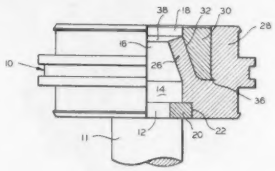
a plurality of pipes respectively disposed through said bores, and

said wedge member engaging said pipes at the exposed portions of said bores.

3,868,192
METHOD AND MEANS FOR ASSEMBLING PISTON AND PISTON ROD

Harold W. Pennington, Battle Creek, and William H. Ward, Athens, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Oct. 5, 1972, Ser. No. 295,399
Int. Cl. F16d 1/06
U.S. Cl. 403—263 7 Claims

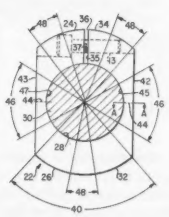


1. A piston assembly comprising a piston rod, a piston head securable to the piston rod, an elongated inwardly tapered groove formed in the piston rod having a circumferential surface forming an obtuse angle with the peripheral surface of the rod, said piston head including an inner axially projecting flange and an outer axially projecting flange forming with the inner flange a relatively deep internal annular groove, and independent swaging means longer in axial extent than said elongated groove insertable forcibly into said annular groove for bending inwardly of the piston rod said inner flange so that it becomes disposed along and in secure surface engagement with the said circumferential surface of the tapered groove, said swaging means becoming an integral part of the piston head following insertion thereof in said internal annular groove so as to overlap one end of said elongated groove.

3,868,193
COLLAR

Donald E. Schott, Emerson, N.J., assignor to Thomas C. Wilson, Inc., Long Island City, N.Y.

Filed June 13, 1972, Ser. No. 262,373
Int. Cl. F16d 1/06
U.S. Cl. 403—344 8 Claims



1. In a clamping collar providing a flange defining a substantially cylindrical-shaped inner surface so as to define an axial opening configured to receive a longitudinal cylindrical member of lesser diameter therein on which the collar is to be clamped, the improvement in said flange comprising:

a. a first pair of opposed sections of substantially equal width and cross-sectional area and of a material capable of flexing when sufficient bending forces are applied thereto, each having a substantially cylindrical inner surface portion and an outer surface portion substantially concentric with the inner surface portion of said section;

b. a radial extending gap dividing at least one of said sections at its center and extending over the entire width of the collar to define at least two segments having opposed end faces of the collar;

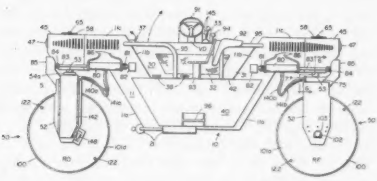
c. a second pair of intermediate opposed sections of said flange connecting said first opposed sections, said intermediate sections having substantially cylindrical inner surface portions of equal diameter to the inner surface portions of the first sections and contiguous thereto to define said substantially cylindrical inner surface, said second intermediate opposed sections each being of a material capable of flexing when sufficient bending forces are applied thereto, and having a lesser cross-sectional area than said first pair of opposed sections and each having a bending flexibility which is greater than the bending flexibility of the first pair of opposed sections due to the lesser crossSectional area; and

d. at least one fastening means interconnecting said segments of said divided section, said fastening means extending from within the circumferential boundary of one segment of the divided section into a portion of and within the circumferential boundary of the other segment of the divided section and being threadedly engaged therweith so as to adapt it to produce movement of the segments toward each other to provide substantial clamping engagement of the collar around the cylindrical member when the segments are moved toward each other, and relaxing of the clamping engagement when the segments are allowed to move away from each other, such that the improved bending flexibility of said flange portions of lesser cross-sectional area facilitates improved uniform bending of said flange and increased clamping engagement contact between the substantially cylindrical inner surface of the collar and the longitudinal cylindrical member and the clamping forces of the collar are sufficient to transmit substantial axial forces between the collar and the cylindrical member independent of rotational forces transmitted thereby providing improved surface to surface clamping of said collar on the cylindrical member.

3,868,194
EXPANDABLE ARTICULATED TANDEM ROLLER

Edgar J. Ferguson; Harry J. Vonderheide, both of Sacramento, and John L. Ferguson, Carmichael, all of Calif., assignors to Iowa Manufacturing Company, Cedar Rapids, Iowa

Filed Feb. 6, 1974, Ser. No. 440,044
Int. Cl. E01c 19/26
U.S. Cl. 404—126 30 Claims



1. A self-propelled roller comprising: a body assembly; a ground engaging roller assembly disposed at each of two spaced locations on and supporting the body assembly, both of the roller assemblies being articulated at said locations with respect to the body assembly for dirigible movement effective to determine the direction of travel of the roller, each of the roller assemblies including at least one pair of rotable, axially aligned rolls disposed on respective opposite sides of an axis of the body assembly through said locations and drive means for propelling said roller assembly along the ground, the drive means of the two roller assemblies being respectively operable upon one pair of diagonally opposite rolls thereof with respect to said axis, another pair of diagonally opposite rolls of the two roller assemblies with respect to said axis being undriven and rotable independently of the first pair; and means for control-

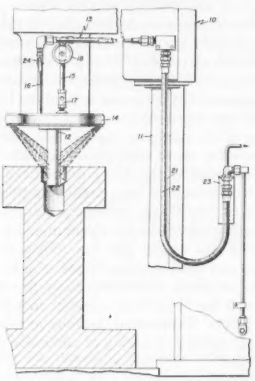
ling the dirigible movement of each roller assembly with respect to the body assembly effective to provide selective adjustment of the two roller assemblies between tandem and echelon positions with respect to each other and the direction of travel of the roller.

3,868,195

COOLANT SYSTEM FOR MACHINE TOOL

Fred A. Anderson, Holden, and Robert F. Newton, Worcester, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Sept. 14, 1973, Ser. No. 397,293
Int. Cl. B23b *51/06*
U.S. Cl. 408—61 **3 Claims**



1. A machine tool, comprising:
a. a housing,
b. a spindle mounted in the housing for rotation about an axis and adapted to carry a tool, and
c. a coolant system mounted on the housing, the system forming the coolant into a generally conical pattern of streams of coolant which streams converge on the said axis, wherein the coolant system includes a hollow ring concentric with the said axis and a pipe connected to the ring and to a source of coolant, and wherein the hollow ring is provided with a radial wall which divides the ring into a first and second axially spaced chambers, wherein the wall is provided with primary orifices, wherein the first chamber is provided with air under pressure, wherein the second chamber is provided with liquid coolant, and wherein the second chamber is provided with secondary orifices leading to the exterior of the ring in general alignment with the primary orifices in the said wall, so that air flows from the said first chamber through the primary orifices in the said wall, passes through the liquid coolant in the said second chamber, and leaves in a stream through the secondary orifices.

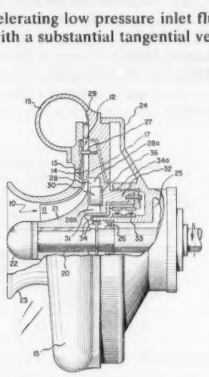
3,868,196

CENTRIFUGAL COMPRESSOR WITH ROTATING VANELESS DIFFUSER POWERED BY LEAKAGE FLOW

Harold Lown, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,129
Int. Cl. F04d *29/44, 29/46*
U.S. Cl. 415—146 **9 Claims**

1. A centrifugal compressor comprising
a rotating impeller, a concentric rotating vaneless diffuser comprising substantially parallel front and back wall members wherein said back wall member extends radially inward and is mounted for rotation separated from said impeller by a clearance space, and means for coupling high pressure fluid flow exiting from said diffuser to an outlet,
said impeller accelerating low pressure inlet fluid to a high velocity fluid with a substantial tangential velocity which



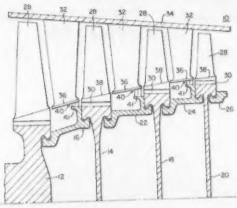
is discharged into said diffuser to establish a vortex flow and partially escapes through said clearance space as leakage flow, and
a leakage flow powering device carried by said back wall member which derives torque from said leakage flow for causing rotation of said rotating vaneless diffuser.

3,868,197

SPACER RINGS FOR A GAS TURBINE ROTOR

Birger O. Hugoson, Wallingford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 410,131
Int. Cl. F01d *1/02, 1/04*
U.S. Cl. 415—199 R **2 Claims**



1. A spacer ring structure for a multi-stage turbomachine comprising an outer casing, at least two axially spaced-apart rotor discs, an annular array of radially directed rotor blades spaced on the periphery of each rotor disc, at least one annular array of stationary blades disposed between the arrays of the blades on the rotor periphery, each rotor having an axially directed flange member extending off at least one side thereof toward the adjacent disc, and at least one spacer ring shrunk fit into frictional engagement with and disposed between adjacent rotor discs, each of said axially extending flanges having a radially inwardly extending circumferential lip on their edges, each of said spacer rings having a radially outwardly directed circumferential groove on each edge, said radially outwardly directed circumferential groove on said spacer ring being in constricting frictional engagement with said radially inwardly directed circumferential lips on said flanges of said rotor discs, said shrunk fit spacer ring having an array of serrations on its outwardly extending groove to frictionally engage a portion of said flange adjacent said lip on said rotor disc.

3,868,198

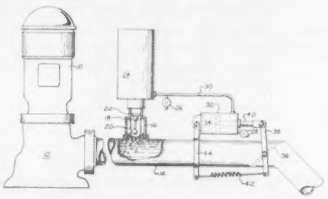
SURGE CONTROL

Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic Inc., Brownfield, Tex.

Continuation-in-part of Ser. No. 311,706, Dec. 7, 1972,. This application June 4, 1973, Ser. No. 366,871

Int. Cl. F04b *49/00*

U.S. Cl. 417—53 17 Claims



1. In a liquid pumping system having
a. a pump with
i. an inlet and
ii. an outlet pipe,
b. said inlet submerged in a liquid reservoir, and
c. an air trap on the outlet pipe;
d. THE IMPROVED STRUCTURE COMPRISING:
e. a bleed tube with
f. a bleed tube outlet at the submerged pump inlet,
g. said bleed tube extending upward from said pump inlet,
h. a plurality of spaced apart holes in the bleed tube,
j. an air tube from the air trap on the outlet to
k. an air motor, and
m. control means attached to said air motor for controlling the fluid flow.

3,868,199

APPARATUS FOR PRODUCING POWERED PARAFFIN

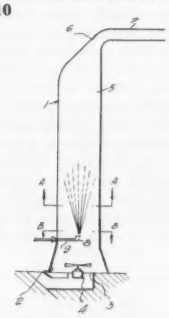
Jose Fera, Parana 791, Buenos Aires, Argentina

Division of Ser. No. 257,111, May 26, 1972,. This application Aug. 8, 1973, Ser. No. 386,665

Claims priority, application Argentina, June 4, 1971, 235975; June 4, 1971, 235976

Int. Cl. B22d *23/08*

U.S. Cl. 425—10 2 Claims



1. Apparatus for producing powdered paraffin wax, comprising a tower consisting of a first frusto-conical portion extending 10% to 15% of the overall height of the tower with its larger diameter at the base of the tower, a second cylindrical portion extending 60% to 70% of the height of the tower joined to the smaller diameter of the first portion, and a third nose-shaped portion extending the remaining height of the tower and connected to an outlet conduit, means for spraying liquid paraffin wax droplets into the lower end of the cylindrical portion and means in the frusto-conical portion for blowing inert cooling gas upwardly through the tower to produce a flow of powdered paraffin wax as solidified droplets.

3,868,200

CONCRETE SCREED MEANS FOR ALIGNED MOULDS

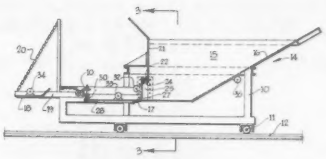
Robert Lyndon Bratchell, Ottoway, South Australia, Australia, assignor to Concrete-Industries (Monier) Limited, Ottoway, South Australia, Australia

Filed Oct. 10, 1972, Ser. No. 295,995

Claims priority, application Australia, Nov. 11, 1971, 6967/71

Int. Cl. B28b *13/02*

U.S. Cl. 425—64 5 Claims



1. Concrete screed means for the discharging and screeding of wet mix concrete into a series of aligned moulds each of shape for the moulding of concrete sleepers and each positioned between the rails of a pair of guide rails extending along respective sides of the series of moulds,
said screed means comprising:
a frame,
support wheels supporting the frame,
a hopper on the frame having a front wall which slopes downwardly and rearwardly, two side walls and a rear wall but no base,
a rearwardly extending flow guide plate, and resilient means interconnecting the flow guide plate and the hopper rear wall,
at least one vibrator mounted directly on said front wall for the vibration thereof and at least one vibrator on said flow guide plate for the vibration thereof,
so constructed and arranged that when the wheels engage the guide rails they are guided thereby to guide the hopper for movement over the moulds so that when the hopper is thus moved concrete is discharged therefrom into the moulds; when the vibrators are operated they are so operated as to vibrate only that concrete in their immediate respective vicinities, so that the lower portion of the concrete discharged from the locality of the front wall is densified by vibration thereof and the upper portion of the concrete is densified by vibration of the flow guide plate,
said flow guide plate having a front vertical portion, a rearwardly curved portion and a trailing portion, there being two said vibrators, one on each of the front vertical and trailing portions, the front portion of said flow guide plate being solely supported on said hopper.

3,868,201

POWDERED METAL PRESS

Roland A. Jacobson, Deerfield, and Billy F. Janes, Buffalo Grove, both of Ill., assignors to The Wickes Corporation, Saginaw, Mich.

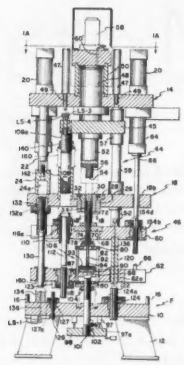
Filed Apr. 17, 1973, Ser. No. 352,055

Int. Cl. B30b *11/02*

U.S. Cl. 425—78 5 Claims

1. In a powdered metal press having a frame, a die table having an open-ended die cavity mounted on said frame for vertical reciprocation, upper ram means and first and second lower ram means mounted on said frame in vertical alignment with each other and said die table for vertical reciprocation relative to each other and said die table, and control means for

driving said table and said ram means in vertical movement relative to said frame to compress a charge of powdered metal within said cavity between said upper and lower ram means and to subsequently eject the compressed metal from said cavity; the improvement comprising a first vertical sizing bar mounted upon said upper ram means and projecting downwardly therefrom, said die table having an opening therethrough slidably receiving said first sizing bar, a second vertical sizing bar mounted on the lowermost of said lower ram means and projecting upwardly therefrom in vertical alignment with said first sizing bar, the uppermost of said lower ram means having an opening therethrough receiving said second sizing bar, a collar in the last mentioned opening slidably receiving said second sizing bar and projecting upwardly from said uppermost lower ram means, said collar being engageable with said first sizing bar to establish a minimum spacing between said upper ram means and said uppermost lower ram means and said first sizing bar being engageable with said second sizing bar to establish a minimum space between said upper ram means and said lowermost lower ram means, and stop means on said upper ram means engageable with cooperating means on said die table to establish a minimum spacing between said table and said upper ram means.



3,868,202

APPARATUS FOR THE PRODUCTION OF COMPOSITE CONTAINERS

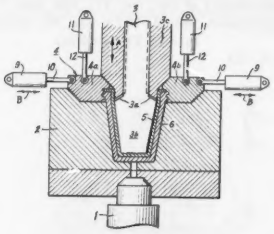
Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. No. 211,898, Dec. 27, 1971, Pat. No. 3,816,580. This application Aug. 23, 1973, Ser. No. 390,725

Int. Cl. B29d *23/03*

U.S. Cl. 425—242 B **12 Claims**

1. Apparatus for blow molding composite plastic articles comprising a parison mold, a core on which a parison is molded in said mold, a spacer adapted to carry a liner and means causing relative movement of said core, spacer and parison mold in a molding cycle for molding the parison, means applying a preformed liner to said spacer, means for axially aligning said spacer carrying said liner with the parison mold while maintaining said liner spaced in proximity from said core, means to contact said core with said liner, means placing said core, and said liner in contact with said parison mold into molding position, and means introducing plastic into said parison mold to form a composite parison.



3,868,203

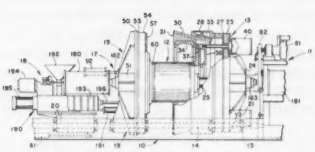
TIRE MOLDING MACHINE

Leonard G. Turk, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio

Division of Ser. No. 143,847, May 17, 1971, Pat. No. 3,782,871. This application Dec. 26, 1973, Ser. No. 428,140

Int. Cl. B29h *3/08, 5/02, 17/00;* **B29f** *1/00*

U.S. Cl. 425—242 **5 Claims**



1. A tire making machine comprising a cylindrical core, side wall mold sections movable axially of said core, said core projecting axially in cantilever fashion from one of said side wall mold sections and being separable from the other of said side wall mold sections to permit the placement of tire components over said core, each side wall mold section including toe rings projecting axially inwardly thereof adapted to support tire components such as bead rings, means operative to expand said core radially from a diameter less than that of said toe rings to a diameter greater than that of said toe rings while maintaining its cylindrical shape to form a shoulder on the ends of said drum adapted to cooperate with said toe rings to retain such bead rings thereon, means operative to convert said core from such cylindrical shape to tire shape to form the interior of a tire cavity when said side wall mold sections have moved axially thereagainst, an elastic yet substantially rigid surface on said core in both the cylindrical and tire shape thereof, and injection means operative to fill the cavity remaining after placement of such components with an elastomeric material.

3,868,204

APPARATUS FOR CURING ELONGATE WORKPIECES

Hendrikus-Johannes Bongers, Huls Bei Krefeld, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Feb. 14, 1974, Ser. No. 442,347

Claims priority, application Germany, Feb. 14, 1973, 2307103

Int. Cl. B29c *17/02*

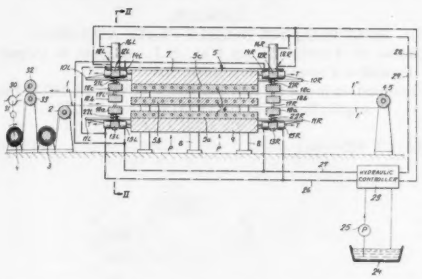
U.S. Cl. 425—338 **8 Claims**

1. An apparatus for curing a web of polymeric material, comprising:

a press with a stack of heated platens, including a top platen, a bottom platen and at least one intermediate platen forming a plurality of superposed curing stages between them;

stationary deflecting means positioned alongside said stack between the levels of successive stages for engagement by a web led in several passes through said stages;

a pair of clamps movably disposed at opposite sides of said stack, each clamp being provided with a top jaw, a bottom jaw and at least one intermediate jaw substantially aligned with said platens for bracketing the passes of said web entering and leaving said stages;



intermittently operable actuating means for closing first said jaws and thereafter said platens on the interposed passes of said web;

mechanism synchronized with said actuating means for moving said clamps apart in a position of closure of said jaws but prior to closure of said platens with consequent stretching of said passes preparatorily to application of heat and pressure to sections of the stretched web for curing same; and

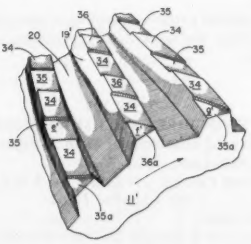
feed means operative upon a reopening of said jaws and said platens to advance said web for positioning previously uncured sections between platens.

3,868,205

EMBOSSED PAPER TOWELING AND METHOD OF PRODUCTION

Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 15, 1973, Ser. No. 341,464
Int. Cl. B44b *5/00*
U.S. Cl. 425—363 **5 Claims**



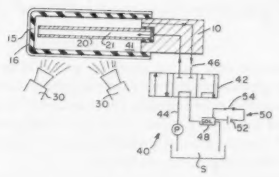
1. In embossing apparatus, a pair of cooperable embossing rolls each having a series of ribs and grooves extending continuously lengthwise of the rolls, the ribs being spaced apart circumferentially by the said grooves disposed about the roll periphery, the ribs of one roll each having a plurality of surface land areas also extending longitudinally on the ribs and projections of these ribs extending above the land areas and separated longitudinally by the land areas and peripherally from projections of adjacent ribs by the said grooves, the ribs of the other roll having surface land areas extending longitudinally on the ribs and recesses of the ribs lying below and separated by these latter mentioned land areas for mating with the said projections, and the projections of the one said roll in the rotation of the cooperable embossing rolls being receivable in the mating recesses of the other said roll, the said recesses being shallow relative to the depth of the ribs.

3,868,206

APPARATUS FOR MANUFACTURE OF HIGHLY ORIENTED POLYMERIC CONTAINERS

Paul M. Erlandson, and Edmund H. Merz, both of Palos Park, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 199,788, Nov. 17, 1971, abandoned. This application July 19, 1973, Ser. No. 380,788
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 B **3 Claims**



1. An apparatus having a plurality of of elements adapted to operate in sequence to produce a biaxial oriented container, said apparatus comprising:

a. a support;

b. elastomeric means on said support for carrying a parison of a homogeneous mass of a thermoplastic material which undergoes orientation when stretched just above its glass transition temperature;

c. means adjacent the elastomeric means for depositing particles of the thermoplastic material upon the elastomeric means;

d. means carried within the elastomeric means for heating and fusing the thermoplastic particles into a homogeneous mass in the form of a parison;

e. an expansion mold for receiving the elastomeric means carrying the fused parison, and for shaping the parison upon expansion thereof and

f. a liquid system connected to said elastomeric means for directing substantially incompressible liquids through said elastomeric means for cooling the fused parison to a temperature just above the glass transition temperature of the material and for subsequently expanding the cooled parison.

3,868,207

APPARATUS FOR PRODUCING PRECAST CONCRETE MEMBERS

Tadao Otsuki; Tokishige Tsuboi; Masashi Sudo, and Hidefumi Matsuda, all of Tokyo, Japan, assignors to The Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1973, Ser. No. 322,717
Claims priority, application Japan, Jan. 13, 1972, 47-5525
Int. Cl. B28b *11/00*
U.S. Cl. 425—404 **10 Claims**

1. Apparatus for producing precast concrete members, comprising:

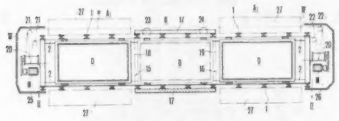
a curing chamber in which concrete is to be cured; concrete curing means in said curing chamber; said curing chamber having a first side facing toward a concrete placing section; and a second side facing toward a second concrete placing section;

a first concrete placing section in which work for concrete placing is performed; said first concrete placing section having a first side facing toward said curing chamber first side;

a second concrete placing section in which work for concrete placing is performed and which has a respective second side facing toward said curing chamber second side;

a first plurality of precast concrete form members for receiving and shaping concrete;

first horizontal transfer means for said first form members; said first form members being connected to said first horizontal transfer means so that each said first form member is individually movable by its said first transfer means; said first horizontal transfer means extending into



and between said curing chamber and said first concrete placing section; said first form members being reciprocally movable between said first concrete placing section and said curing chamber; said first horizontal transfer means being adapted for enabling such reciprocal movement of said first form members;

a second plurality of precast concrete form members for receiving and shaping concrete;

second horizontal transfer means for said second form members; said second form members being connected to said second horizontal transfer means so that each said second form member is individually movable by said second transfer means; said second horizontal transfer means extending into and between said curing chamber and said second concrete placing section; said second form members being reciprocally movable between said second concrete placing section and said curing chamber; said second horizontal transfer means being adapted for enabling such reciprocal movement of said second plurality of form members;

said first and second horizontal transfer means and the respective said form members connected thereto are arranged in two respective pluralities of vertically stacked, spaced apart layers; said layers of the said first horizontal transfer means and their respective said form members alternate in the vertical stacking with said layers of said second horizontal transfer means and their respective said form members.

9. Apparatus for producing precast concrete members, comprising:

a curing chamber in which concrete is to be cured; concrete curing means in said curing chamber; said curing chamber having a side facing toward a concrete placing section;

a concrete placing section in which work for concrete placing is performed; said concrete placing section having a side facing toward said curing chamber side;

a plurality of precast form members for receiving and shaping concrete;

horizontal transfer means for said form members; said form members being connected to said horizontal transfer means so that each said form member is individually movable by said transfer means; said horizontal transfer means extending into and between said curing chamber and said concrete placing section; said form members being reciprocally movable between said concrete placing section and said curing chamber; said horizontal transfer means being adapted for enabling such reciprocal movement of said form members;

said horizontal transfer means comprises horizontal rails which are engaged by said trucks and along which said trucks are movable;

said form members each comprise a movable truck; said trucks having engaging means which engage the respective said horizontal rails;

each said horizontal rail is defined as one of the two flanges of a channel shaped, elongated rail element, which flanges are arranged one above the other, whereby each channel shaped rail element defines two vertically stacked, relatively closely spaced said rails; on each said rail is a respective said truck.

3,868,208

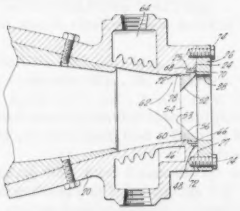
SOAP PLODDER NOZZLE PLATE ASSEMBLY

Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 308,954, Nov. 24, 1972,. This application Mar. 19, 1973, Ser. No. 342,775

Int. Cl. B29f *3/04*

U.S. Cl. 425—467 **4 Claims**



1. A nozzle plate assembly for a soap plodder for producing striated soap extrusions that includes a housing having a discharge end provided with an outlet, said nozzle plate assembly comprising,

a. a nozzle plate adjacent said outlet having an inner and outer face,

b. said nozzle plate having an extrusion opening extending between said inner and outer face and communicating with said housing,

c. said extrusion opening being larger in dimensions at said outer face than at said inner face and being defined by walls that are axially diverging from said inner surface to said outer face at an angle from about 30°to about 60°and,

d. securing means for fastening said nozzle plate to said housing,

e. the area of said extrusion opening at said outer face being at least twice the area of said extrusion opening at said inner face.

3,868,209

TWIN SHEET THERMOFORMER

George H. Howell, Birmingham, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Feb. 22, 1973, Ser. No. 334,841

Int. Cl. B29c *17/04*

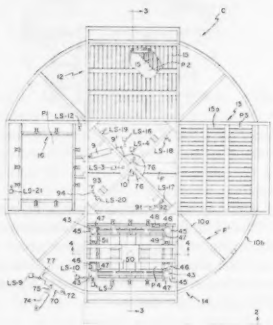
U.S. Cl. 425—504 **6 Claims**

1. Apparatus for forming hollow thermoplastic objects from first and second thermoplastic sheets comprising:

a first and a second carriage means for releasably clamping respective first and second thermoplastic sheets thereon, indexing means supporting each of said first and second carriage means for step-by-step movement to a series of successive work stations disposed along an endless path with said first carriage means maintained one step of movement in advance of said second carriage means, said work stations including a sheet transfer station, at least one heating station and a forming station,

a pair of opposed mold members mounted on opposite sides of said endless path at said forming station for movement between a normally maintained spaced apart mold open position and a clampingly engaged mold closed position, means creating a sheet molding differential pressure in at least one of said mold members,

first means operable upon the arrival of said first carriage means at said forming station for releasing a first sheet carried by said first carriage means from said first carriage means and transferring it to one of said mold members, and for actuating said indexing means to advance said first carriage means from said forming station while



simultaneously advancing said second carriage means with a second sheet thereon to said forming station,

second means operable upon the arrival of said second carriage means at said forming station to shift said mold members to said closed position to fuse said sheets and thereby form said object while said second sheet is retained by said second carriage means,

and third means operable upon the formation of said object to restore said mold members to said open position and to actuate said indexing means to advance said second carriage means from said forming station with the formed object supported thereon.

3,868,210

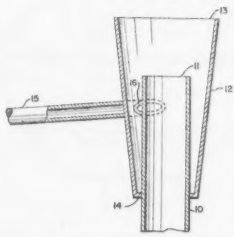
SAFETY FLARE

Samuel W. Simpson, Florissant, Mo., and Thomas E. Innocenzi, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 101,229, Dec. 24, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,474

Int. Cl. F23j 7/00

U.S. Cl. 431—4 1 Claim



1. A process for flaring combustible gas into the air which comprises:

a. passing combustible gas upwardly through an open-topped cylindrical stack and into an enlarged coaxial housing extending above the top of the stack;

b. passing steam into the housing in a manner to produce a swirling mixture of combustible gas and steam and creating a low-pressure vortex into which air is drawn;

c. igniting the resultant swirling mixture with resultant improved combustion and reduced noise level and

d. discharging the resultant burning gas mixture into the atmosphere.

3,868,211

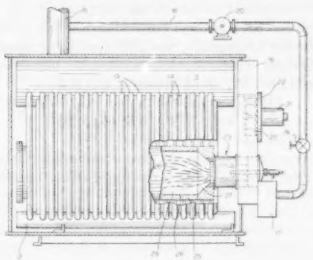
POLLUTANT REDUCTION WITH SELECTIVE GAS STACK RECIRCULATION

Paul G. La Haye; John W. Bjerklie, both of Cape Elizabeth, Maine, and Aqua-Chem, Inc., Milwaukee, Wis.

Filed Jan. 11, 1974, Ser. No. 432,623

Int. Cl. F23l 9/00

U.S. Cl. 431—10 33 Claims



1. A method of burning fuel comprised substantially of hydrocarbon to obtain low levels of nitrogen oxides, carbon monoxide, carbon and other particulates in the exhaust gases therefrom, comprising:

a. projecting concurrently into a combustion zone finely divided fuel and a quantity of air which is substantially less than required for complete combustion of the fuel and a quantity of exhaust gases containing carbon dioxide to produce a flame core having sufficiently low temperature to suppress oxygen from the air from reacting in substantial amount with available nitrogen but to permit said oxygen to react with the hydrocarbons to produce carbon for reacting with said carbon dioxide in said exhaust gases to produce carbon monoxide,

b. introducing further combustion supporting air in such manner as to diffuse and mix with the combustion products of said core progressively downstream after said core has yielded some heat to thereby oxidize residual carbon and carbon monoxide therein to carbon dioxide at temperature which suppress the reaction between nitrogen and oxygen.

3,868,212

RADIANT BURNER AND FURNACE FOR TREATING AT HIGH TEMPERATURE

Bernard J. Lemaire, Faumont, France, assignor to Ressorts du Nord S.A., Paris, France

Continuation of Ser. No. 275,293, July 26, 1972, Pat. No. 3,801,080. This application Oct. 16, 1973, Ser. No. 406,849

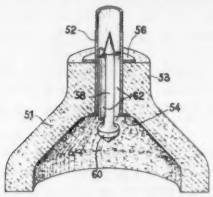
Claims priority, application France, Aug. 3, 1971, 71.28372; Apr. 4, 1972, 72.11736

Int. Cl. F23m 9/00

U.S. Cl. 431—171 7 Claims

1. A burner for heating by the effect of radiation, comprising a body of felt of refractory fibres defining a wall, a metal sleeve which extends through the body and is in interference fit in the felt for receiving a combustible mixture, an outlet orifice defined by the sleeve inside the body, a diffuser in

alignment with said outlet for guiding the ignited combustible mixture in the direction of the wall of the body, and an inner



surface layer on the felt wall which is vitrified by first high temperature heating and constitutes a radiant non porous thin skin.

3,868,213

VIBRATION FURNACE

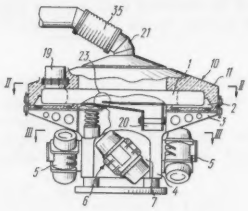
Valery Petrovich Shulika, Moskvorechie 49, kv. 10; Jury Nikolaevich Khazhinsky, Festivalnaya ulitsa, 3, kv. 80; Jury Fedorovich Yakimenko, Novo-Alexeevskaya ulitsa, 3, kv. 16, and Anatoly Vladimirovich Savchenko, ulitsa Vavilova 56, korpus 1, kv. 19, all of Moscow, U.S.S.R.

Filed Oct. 25, 1973, Ser. No. 409,444

Int. Cl. F27b *9/16, 5/16*

U.S. Cl. 432—134 **5 Claims**

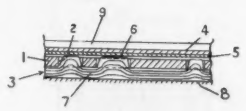
1. A vibration furnace for loose materials, comprising: a vertical bearing pipe with supports; a chute concentric with the vertical bearing pipe and attached to said supports of the vertical bearing pipe by means of brackets radially movable under thermal expansion of said chute; said chute being electrically insulated from said supports of the vertical bearing pipe by means of insulators and resistance heated upon connecting the chute in an electric circuit a loading device communicating with the chute for ensuring the supply of loose materials onto said chute; an unloading device communicating with the chute for providing the discharge of treated loose materials from the chute; and a plurality of vibrators mounted in the lower section of the vertical bearing pipe and imparting helical oscillations to the chute.



3,868,214
PROCESS FOR PRODUCING DECORATED FABRICS

Alan Lomas Shackleton, Mansfield, England, assignor to Ashfield Dyeing & Finishing Company Limited, Ashfield, England

Filed May 4, 1972, Ser. No. 250,136
Int. Cl. D06p *7/00*
U.S. Cl. 8—2.5 **6 Claims**

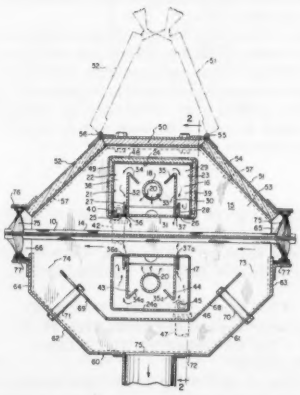


1. A process for decorating a fabric with a three-dimensional pattern which comprises applying a compressing force to portions of a resilient flat fabric disposed in the pattern of the depressed portion of a chosen embossment pattern by pressing against the fabric a stencil having cut out portions shaped as the chosen embossment pattern, said stencil being a sheet with an open-work pattern the openings of said patterns being sufficiently large to permit the fabric to project therethrough upon said compression, exposing the uncompressed portions projecting through said openings to the surface of a vaporixable dyestuff-coated transfer sheet, setting the conditions to cause the dyestuff to transfer to the uncompressed portions of the fabric exposed through the cut out portions of the stencil and to set the pattern of embossment, removing the stencil to leave a fabric having a permanently embossed pattern of a different color from the depressed portions.

3,868,215
METHOD OF STEAM PROCESSING TUBULAR KNIT FABRIC OR THE LIKE

Robert Frezza, Carle Place, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 348,068, April 5, 1973,. This application Apr. 30, 1973, Ser. No. 355,401
Int. Cl. D06c *11/10, 3/00*
U.S. Cl. 8—149.3 **4 Claims**



1. The method of steam processing tubular knitted fabric or the like, which comprises

a. spreading the fabric to generally flat form and conveying it along a predetermined, generally horizontal processing plane,
b. directing opposed jets of processing steam at high velocity toward, and at a large angle to the principal flat surfaces of the fabric from opposite sides, across its width,
c. said processing steam being directed into contact with said fabric in the form of high velocity jets which are effectively continuous across the width of the fabric,
d. at least temporarily confining the steam thus ejected to limited upper and lower regions immediately adjacent to the fabric on opposite sides, and thereafter
e. withdrawing downwardly steam from the said limited regions at a rate sufficient to prevent substantial condensation of steam within said upper region in areas directly above the fabric,
f. steam from said upper region being withdrawn downwardly through said fabric.

3,868,216
PROCESS OF MAKING ACTIVATED, RECURABLE, DURABLE-PRESS FABRICS AND THE PRODUCT

William E. Franklin; Stanley P. Rowland, and John P. Madacsi, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 29, 1972, Ser. No. 293,744
Int. Cl. D06m *3/00*
U.S. Cl. 8—182 **4 Claims**

1. An improvement in the process for imparting durable press properties and permanent configurations to crosslinked cellulosic textiles obtained via impregnation of the cellulosic textile with a solution containing a polycarboxylic acid and a methylolated crosslinking reagent and subsequently drying, curing, and washing the cellulosic textile, which improvement consists of:

a. impregnating the cured and washed textile with a solution of a latent acid catalyst,
b. drying the impregnated textile from (a), and
c. thermally reforming, with restraint, the dried textile from (b) at a temperature of from about 100°C to about 220°C for a period of from about 15 seconds to about 300 seconds.

3,868,217
CORROSION INHIBITION

William Robert Hollingshad, Bethel Park, Pa., assignor to Calgon Corporation, Robinson Township, Pa.

Continuation-in-part of Ser. No. 347,009, April 2, 1973, abandoned. This application May 9, 1974, Ser. No. 468,347
Int. Cl. C23f *11/14, 11/16*
U.S. Cl. 21—2.7 A **4 Claims**

1. A method of inhibiting the corrosion of metals in a water system which comprises maintaining in the water of said system at least about 10 mg/l of a phosphoric acid ester of triethanol amine.

3,868,218
METHODS AND DEVICES FOR AUTOMATICALLY ACTIVATING A CHEMICAL PROCESS AT A GIVEN TEMPERATURE

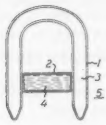
Sven Ivan Arvid Tornmarck, Malmo, and Per Olof Andersson, Staffanstorp, both of Sweden, assignors to Food Control AB, Malmo, Sweden

Filed Feb. 17, 1972, Ser. No. 227,028
Claims priority, application Sweden, Feb. 18, 1971, 2082/71
Int. Cl. G01n *31/00;* **G01k** *1/02*
U.S. Cl. 23—230 R **10 Claims**

1. A method of automatically combining chemical substances at a given temperature, one of said substances being

disposed in a first container and the other being disposed outside of said container so that said substances are separated by a fragile wall of said container, comprising the steps of,

providing an activator of a different substance than said two substances which at said given temperature undergoes a phase transition thereby increasing its volume, which activator is encapsulated in a second container located in



proximity to said fragile wall of said first container and being at least partly elastic so as to be expandible without breaking,

and subjecting said activator to said given temperature whereby it undergoes said increasing volume change and breaks said wall of said first container so that the two chemical substances are immediately brought into contact with each other.

3,868,219

DETERMINATION OF HCG GLUCOSE AND GALACTOSE IN BODY FLUIDS WITH CHROMOGENIC INDICATORS

Bernard Hurenkamp, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed May 30, 1973, Ser. No. 365,393

Claims priority, application Netherlands, June 14, 1972, 7208092

Int. Cl. G01n *21/06, 33/16*

U.S. Cl. 23—230 B **5 Claims**

1. In a process for the detection and determination of a member of the group consisting of human chorionic gonadotrophin, glucose, and galactose present in a fluid sample, the detection and determination being based upon a visual color change produced by the oxidation of an oxidizable chromogenic compound as a component in a test reaction system including other test reaction components, the improvement which comprises inactivating any undesired substances which may be present in said fluid sample by first contacting the sample with a purified cellulose which has been further subjected to treatment with an oxidizing agent, and then contacting the sample with said chromogenic compound.

3,868,220

PROCESS FOR EXTRACTING PROCAINAMIDE FROM BLOOD

Harry Klinger, Summit, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Aug. 13, 1973, Ser. No. 387,546

Int. Cl. B01d *11/00;* **G01n** *31/02, 33/16*

U.S. Cl. 23—230 B **11 Claims**

1. A process for extracting procainamide from blood that comprises:

(i) mixing a blood sample with alcoholic alkali;

(ii) adding to the mixture of (i) a water-immiscible solvent which will dissolve the procainamide in the blood;

(iii) adding a water-soluble colloid to the mixture of blood sample, alcoholic alkali, and water-immiscible solvent; and

(iv) separating the solvent from the blood residue.

3,868,221

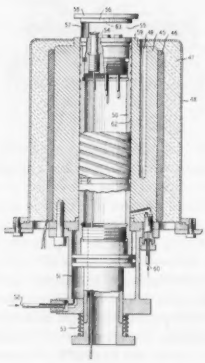
METHOD AND APPARATUS FOR DEGRADATION TESTING OF STABILIZED POLYMERS

John Benedict Howard, Summit, and Robert Franklin Westover, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Aug. 31, 1973, Ser. No. 393,597

Int. Cl. G01n *25/00, 33/44*

U.S. Cl. 23—230 R **11 Claims**



1. Apparatus for the testing of polymeric materials containing at least one additive for protection against exothermal degradation, comprising an oven, which oven contains thermal sensors each of which can produce an electrical output signal, and signal processing means for accepting at least one of the electrical output signals and producing at least time interval information characterized in that

a. the thermal sensors include at least one reference sensor and a plurality of sample sensors;

b. the oven includes sample insertion means for inserting a plurality of samples of at least one polymeric material into the oven, the thermal mass of which insertion means is at most 10 percent of the thermal mass of the oven, each inserted sample being brought into thermal contact with one sample sensor;

c. the signal processing means includes means for comparing the output of each sample sensor with the output of one reference sensor and producing a difference signal;

d. the signal processing means includes means for indicating the time, relative to an initial time, at which the difference signal derived from each sample sensor, meets a preset condition.

3,868,222

HIGH RESOLUTION GEOCHEMICAL PROSPECTING METHOD AND APPARATUS

Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Rexdale, Ontario, Canada

Filed Jan. 9, 1974, Ser. No. 431,962

Claims priority, application Canada, Mar. 19, 1973, 166975

Int. Cl. G01n *1/22, 31/12, 33/24*

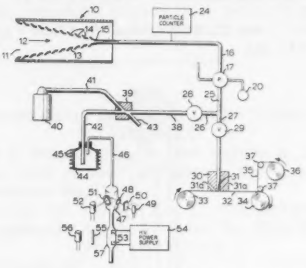
U.S. Cl. 23—230 EP **17 Claims**

1. A method of performing a rapid geochemical survey of an area of the earth from a moving vehicle comprising:

a. receiving, at known locations in said area, an air stream containing atmospheric particulates, the rate of flow of said air stream being at least about 10 cubic meters per minute;

b. concentrating said particulates as they are moving in said air stream, and forming a stream of concentrated particles;

c. successively analyzing said concentrated particles for predetermined elements or compounds, which successive



analyses are respectively made of particles which were received during period of not more than 15 seconds each; and

d. correlating said analyzed particles with said known locations to thereby determine the location in said area of the source of said particles.

3,868,223

MEASURING DEVICE FOR MEASURING THE OXYGEN CONSUMPTION OF BIOLOGICAL SUBSTANCES

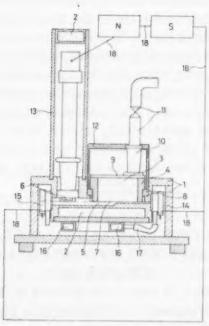
Klaus Robock; Ullrich Teichert, both of Essen, and Paul Gerhard Munder, Emmendingen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Feb. 16, 1973, Ser. No. 333,150

Claims priority, application Germany, Feb. 18, 1972, 2207615

Int. Cl. G01n *27/46, 33/16*

U.S. Cl. 23—253 R **10 Claims**



1. A measuring device for measuring the oxygen consumption of biological substances, comprising wall means defining a first chamber adapted to contain an oxygen-consuming substance, and a second chamber for containing gaseous oxygen and communicating with said first chamber; a gas-permeable membrane separating said chambers from one another so as to permit passage of gas between them; an oxygen measuring electrode which is at least in part exposed at the interior of said second chamber for measuring the oxygen content therein and providing electric signals indicative of the oxygen content; and means connected with said electrode for controlling the oxygen content in said second chamber as a function of the electrical signals received from said electrode.

3,868,224

DISPOSABLE GAS MEASURING PIPET

Stuart M. Davis, and Dennis R. Tichendorf, both of Madison, Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 1, 1973, Ser. No. 411,643

Int. Cl. G01n *7/18;* **B01l** *5/02*

U.S. Cl. 23—259 **3 Claims**

1. A disposable gas measuring apparatus comprising:

a. a hollow tubular pipet having calibrations thereon and having constricted openings at the opposite ends thereof, one end portion of the pipet being bent through an angle greater than 90° with respect to the longitudinal axis of the pipet;

b. a hollow reaction tube having an opening at one end thereof and being sealed at the opposite end thereof, the end portion of the reaction tube that is sealed being bent through an angle of approximately 90° with respect to the longitudinal axis of the reaction tube, the said one bent end portion of the pipet being disposed within the opening at the said one open end of the reaction tube; and

c. a seal located between the pipet and the reaction tube at the zone of their assembly.

3,868,225

SODIUM CHLORATE OXYGEN PRODUCING APPARATUS

Arthus H. Tidd, Hollywood, Fla., assignor to Safety Laboratories, Inc., Miami, Fla.

Filed May 25, 1973, Ser. No. 363,932

Int. Cl. B01j *7/00*

U.S. Cl. 23—281 **13 Claims**

1. A sodium chlorate oxygen producing apparatus comprising:

a sodium chlorate candle container,

a sodium chlorate candle of generally elongate cylindrical form housed and supported within the candle container, a gas permeable thermally insulating material disposed around the candle and supporting the candle in spaced relationship with the walls of the candle container,

an ignition device attached to the candle container and adapted, upon operation, to ignite the sodium chlorate candle,

an outlet passage means for permitting exit of oxygen from the candle container, and

means disposed in the path of oxygen generated by the sodium chlorate candle following ignition to eliminate substantially all carbon monoxide and carbon dioxide from that oxygen,

the sodium chlorate candle comprising first, second, third, fourth and fifth different compositions arranged in order

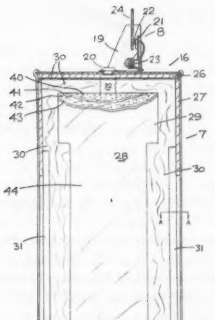
longitudinally along the candle from the point of ignition by the ignition means,

said first composition being a rapidly burning flash composition having constituents given as % by weight as follows;
about 69½ to 70½ $NaClO_3$
about 9½ to 10½ Fe
about 9½ to 10½ BaO_2
9½ to 10½ Boron;

said second composition being a slower burning booster composition having constituents given as % by weight as follows;
about 45 to 55 Fe
about 45 to 55 BaO_2;

said third composition being a more slowly burning cone composition having constituents given as % by weight as follows;

an intermediate composition having
about 36½ to 37½ $NaClO_3$



about 36½ to 37½ Fe
about 3½ to 4½ BaO_2
about 21½ to 22½ inert filler

into which is mixed as a % by weight of said intermediate composition about 5¾% to 6¾% of said flash composition;

said fourth composition being an even more slowly burning booster composition having constituents given as % by weight as follows;
about 64 to 65 $NaClO_3$
about 18 to 19 Fe
about 16 to 17 BaO_2
about ¼to 1¼ inert filler; and

said fifth composition being the slowest burning of the five compositions, forming the main body and having constituents given as % by weight as follows;
about 90 to 91 $NaClO_3$
about 4 to 5 Fe
about 4 to 5 BaO_2
about 0 to 1 inert filler.

3,868,226

REACTION VESSELS

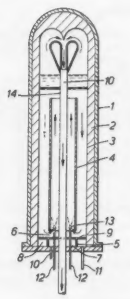
Brian Hoyle Thompson, Harpenden, England, assignor to The Gas Council, London, England

Filed May 25, 1972, Ser. No. 256,834

Claims priority, application Great Britain, June 4, 1971, 19014/71

Int. Cl. B01j *1/00;* **C10g** *13/18*

U.S. Cl. 23—284 **3 Claims**



1. An apparatus for performing a chemical reaction between a reactant gas and a fluid material to produce a gaseous product comprising an elongated thermally insulated reaction vessel in a vertical position and when in use containing a fluidised bed, having mounted within it at least one dividing member which is shorter than the internal length of the vessel and which divides the interior of the vessel into at least two regions, at least one to act as a riser for the fluidised bed and a region surrounding the riser or risers to act as a downcomer therefor, all the regions being in communication with each other beyond the ends of the dividing member or members, separate means for supplying the reactant gas at the lower end of the reaction vessel so as to maintain a zone of ascending particles in the fluidised state in the riser or risers and a zone of descending particles in the fluidised state in the downcomer, at least one nozzle associated with each riser within the reaction vessel for injecting the fluid material into the reactant gas and an outlet for a gaseous reaction product at the upper end of the reaction vessel, said outlet comprising a duct which opens at a point substantially above said fluidised bed to prevent entry of particles therein and extends downwardly through the reaction vessel to exit through the base thereof.

3,868,227

AGGLOMERATING FINE ALKALI METAL SILICATE PARTICLES TO FORM HYDRATED, AMORPHOUS, GRANULES

Clarence H. Gericke, Wayne, and Richard H. Pierce, Broomall, both of Pa., assignors to Philadelphia Quartz Company, Philadelphia, Pa.

Filed Apr. 5, 1972, Ser. No. 241,393

Int. Cl. B01j *2/00;* **C01b** *33/32*

U.S. Cl. 23—313 **10 Claims**

1. A process for preparing hydrated, amorphous, granular alkali metal silicates having an SiO_2/M_2O mole ratio of 1.2/1.0 to 4.0/1.0 comprising:

a. mixing fine, amorphous alkali metal silicate particles selected from the group consisting of sodium silicate, potassium silicate and sodium-potassium silicate and an agglomerating liquid which is an alkali metal silicate solution selected from the group consisting sodium silicate, potassium silicate and sodium-potassium silicate, said mixture containing between 23 and 33% moisture;

b. energetically mixing and heating the mixture to temperatures between 120° and 230°F. until it granulates, be-

comes flowable and the moisture content is between 20 and 27;

c. charging the granulated mixture to a rotary dryer; and

d. conducting air through the dryer with an inlet temperature of above 240°F and an outlet temperature above 130°F to dry the agglomerated material to form a hydrated, amorphous, granular alkali metal silicate product having a moisture content between 15 and 25%.

3,868,228

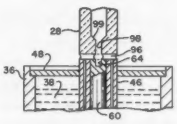
METHOD OF GROWING CRYSTALLINE BODIES FROM THE MELT

Abraham I. Mlavsky, Lincoln, and Nicholas A. Pandiscio, Wayland, both of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Division of Ser. No. 148,589, June 1, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 386,175

Int. Cl. B01j *17/18*

U.S. Cl. 23—301 SP **12 Claims**



1. Method of growing a crystalline body of a selected material from a melt thereof comprising establishing a molten film of said material overlying and covering a first substantially horizontal surface of predetermined configuration, growing and pulling a crystalline body from said film, moving a second substantially horizontal surface into contiguous and edge-aligned relation with said first surface after said body has grown to a selected length, spreading said film so that it overlies both said surfaces, growing and pulling said body from the film overlying both said surfaces, and continuously replenishing said film as said body is being grown and pulled.

3,868,229

DECORATIVE ELECTROPLATES FOR PLASTICS

John L. Hurley, Mahwah, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed June 10, 1974, Ser. No. 477,964

Int. Cl. B23p *3/00*; **C23b** *5/60, 5/06*

U.S. Cl. 29—195 **10 Claims**

1. In the process of decorating plating plastics wherein the plastic is first caused to become electrically conductive at least on the surface and thereafter metal is electrodeposited thereupon, the improvement comprising initially electrodepositing on the electrically conductive plastic surface nickel having a tensile strength less than about 105,000 pounds per square inch, as measured in deposits at least about 1 mil thick, subsequently electrodepositing prior to a non-continuous outer layer of chromium a layer of sulfur-containing nickel having the capability of levelling the surface to a surface roughness of less than about 4 microinches, the sulfur content of said sulfur containing nickel being about 800 to about 1,800 parts per million and the ratio of thickness of said first mentioned nickel deposit to said second mentioned nickel deposit being at least about 2 whereby is produced a decorative plated plastic having good resistance to the deleterious effects of thermal cycling.

3,868,230

TUNGSTEN SUBSTRATE FOR HIGH-STRENGTH HIGH-ODULUS FILAMENT

Val J. Krukonis, Lexington, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Sept. 15, 1972, Ser. No. 289,747

Int. Cl. B23p *3/00*

U.S. Cl. 29—198 **3 Claims**

2. A high-strength, high-modulus composite filament comprising:

a tungsten filament substrate formed from lamp grade tungsten that is free of silicon; and

a coating on the tungsten filament of a high-strength, high-modulus material taken from the class consisting essentially of boron and silicon carbide.

3,868,231

FUEL COMPOSITION

Eduard J. Van De Kraats; Arnold A. Buitelaar, and Thomas Schreuder, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,355

Claims priority, application Netherlands, Dec. 27, 1971, 7117866

Int. Cl. C10l *1/14*

U.S. Cl. 44—62 **2 Claims**

1. A residual fuel having improved low - temperature properties wherein at least about 8% by weight of fuel consists of waxes having a melting point greater than about 35°C and a boiling point greater than about 350°C, said fuel having incorporated therein from about 0.01 to about 0.05% by weight of a copolymer of (1) a C_{18} to C_{26} alkyl ester of acrylic acid and (2) 4-vinylpyridine, the copolymer having a number average molecular weight between 3,000 and 100,000 and a molar ratio of units from (1) to units from (2) of 2-5:1.

3,868,232

RESIN-BONDED ABRASIVE TOOLS WITH MOLYBDENUM METAL FILLER AND MOLYBDENUM DISULFIDE LUBRICANT

Richard H. Sioui, Holden, and Harvey M. Cohen, Randolph, both of Mass., assignors to Norton Company, Worcester, Mass.

Division of Ser. No. 163,976, July 19, 1971, Pat. No. 3,779,727, which is a continuation-in-part of Ser. No. 61,905, Aug. 7, 1970, abandoned. This application Apr. 25, 1973, Ser. No. 354,460

Int. Cl. C08g *51/12*

U.S. Cl. 51—298 **1 Claim**

1. An abrasive tool comprising particles selected from the group consisting of metal clad diamond or metal clad cubic boron nitride bonded at at least one surface thereof, the bonding material being a synthetic resin binder but characterized in that it contains from 10 to 60 percent by volume, of molybdenum metal filler and from 10 to 30 percent, by volume, of molybdenum disulfide.

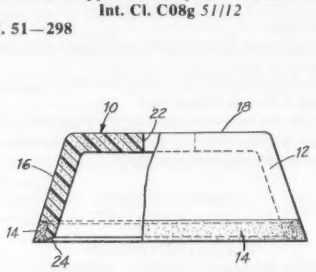
3,868,233
GRINDING WHEEL CORE

Edgar B. Carver, Sutton, and Richard H. Sioui, Holden, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 340,578, March 12, 1973, abandoned. This application July 2, 1973, Ser. No. 375,766

Int. Cl. C08g *51/12*

U.S. Cl. 51—298 **4 Claims**



1. In a grinding wheel with a peripheral abrasive section, a core comprising a particulate first metallic component, a particulate second metallic component, and a particulate synthetic thermosetting resin, all bonded together, wherein

the first metallic component comprises from 40 to 90 core volume percent of a metal selected from the group consisting of aluminum and copper and a mixture thereof,

the second metallic component comprises from 2 to 35 core volume percent of a metal selected from the group consisting of tin and an alloy of tin with a melting point at or less than 350°C, and

the resin comprises from 5 to 30 core volume percent.

3,868,234
METAL-BONDED CUBIC BORON NITRIDE CRYSTAL BODY

Ethel L. Fontanella, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 158,991, July 1, 1971, abandoned. This application Nov. 1, 1972, Ser. No. 302.821

Int. Cl. B24d *3/06;* **C04b** *31/16*

U.S. Cl. 51—309 **6 Claims**

1. An abrasive body consisting essentially of cubic boron nitride crystals and an alloy matrix, the alloy matrix comprising a first metal selected from the group consisting of aluminum, silicon, vanadium, niobium, lanthanum and other rare earth metals and together therewith any metal that, when molten, will wet said first metal and form an alloy therewith that exhibits finite, limited reactivity with cubic boron nitride and is homogeneous on solidification, said alloy having a melting point below about 1500°C and each component of said alloy consisting of at least 1 percent by weight of said alloy and said alloy matrix constituting at least 30% of volume of said abrasive body.

3,868,235
PROCESS FOR APPLYING HARD CARBIDE PARTICLES UPON A SUBSTRATE

Gerhard R. Held, Mt. Clemens, Mich.

Continuation-in-part of Ser. No. 155,299, June 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 804,511, March 5, 1969, abandoned. This application July 19, 1973, Ser. No. 380,779

Int. Cl. C04b *31/16*

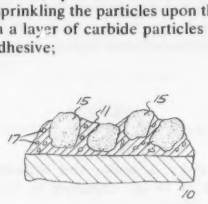
U.S. Cl. 51—309 **7 Claims**

1. A process for applying cemented hard carbide particles to the surface of a metal substrate comprising:

applying metal matrix bonding layer essentially free of copper, in a molten form, upon the said metal substrate, the matrix being characterized by having a melting point around 2,000°F. and below the melting point of both the carbide particles and the metal substrate;

next applying a layer of a non-metallic tacky organic adhesive material that is essentially volatalizable in a non-oxidizing furnace, upon the surface of the said matrix;

then, loosely sprinkling the particles upon the layer of adhesive to form a layer of carbide particles held in place by the tacky adhesive;



next, baking the layered substrate in a furnace having a non-oxidizing atmosphere at a temperature below the melting point of the substrate, but high enough to essentially volatalize said adhesive and to melt the matrix to bond to the particles and to fuse the matrix to the substrate, and

finally cooling the particle coated substrate.

3,868,236
CENTRIFUGAL GAS-LIQUID SEPARATOR

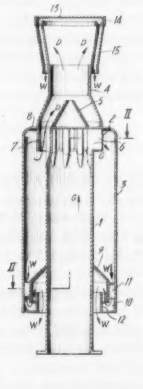
Franz Meier, Oberhausen-Sterkrade; Erich Ossendorf, Bochum, and Hubert Wolfgarten, Oberhausen-Sterkrade, all of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen-Sterkrade, Germany

Continuation-in-part of Ser. No. 195,924, Nov. 5, 1971, abandoned. This application Jan. 24, 1974, Ser. No. 436,206

Claims priority, application Germany, Nov. 17, 1970, 2056388

Int. Cl. B01d *45/12, 53/24*

U.S. Cl. 55—203 **8 Claims**



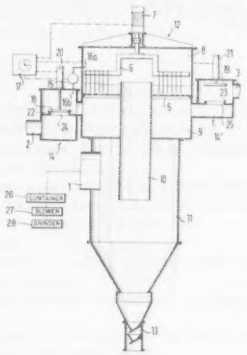
1. A centrifugal gas-liquid separator comprising riser means for conducting a gas-liquid mixture into said separator, annular bladed means in flow communication with said riser means, outer jacket means circumferentially surrounding said annular bladed means and defining an enclosure extending about said bladed means from proximately above said bladed means and depending downwardly therefrom, gas discharge means disposed above said bladed means to extend upwardly therefrom, said bladed means comprising blades defining a plurality of laterally directed channels closed at their upper and lower extremities for discharging said gas-liquid mixture

radially outwardly from said bladed means into said jacket means and blades defining a plurality of vertically directed gas channels for discharging gas upwardly into said gas discharge means, said gas and liquid channels being circumferentially juxtaposed about said annular bladed means, means located below said annular bladed means for narrowing the liquid discharge flow path within said jacket means, and fins located proximate said narrowing means within said jacket means for deflecting the flow direction of said liquid.

3,868,237
DUST FILTER

Wolfgang Berz, Mauerkircherstrasse 13, Munich, Germany

Filed Apr. 30, 1973, Ser. No. 355,917
Claims priority, application Germany, May 5, 1972, 2222170
Int. Cl. B01d *53/30*
U.S. Cl. 55—270 **11 Claims**



1. In a filter arrangement for purifying a gas of particulate solid material with which said gas is contaminated, said arrangement including a filter chamber, first inlet means for admitting contaminated gas to said chamber, first outlet means for releasing purified gas from said chamber, second inlet means for admitting a purging gas to said chamber and second outlet means for discharging said purging gas from said chamber, a layer of particulate filter medium in said chamber, said first inlet means and said first outlet means defining a first path of gas flow through said chamber, said first path passing through said layer in one direction from said first inlet means to said first outlet means, said second inlet means and said second outlet means defining a second path of gas flow through said chamber, said second path extending from said second inlet means toward said second outlet means and passing through said layer in a direction opposite to said one direction, first valve means in said first path movable between a path opening and a path blocking position, second valve means in said second path movable between a path opening and a path blocking position, the improvement which comprises:

a. first and second valve operating means respectively associated with said first and second valve means for moving the associated valve means between said positions thereof; and

b. valve control means operatively connected to said valve operating means for causing operation of said valve means in cycles of sequential stages, each cycle including

1. a first stage wherein said first valve means is in the path opening position and said second valve means is in the path blocking position,

2. a second stage wherein said first valve means is being moved to the path blocking position while said second valve means remains in the path blocking position,

3. a third stage wherein said second valve means is being moved to the path opening position while said first valve means remains in the path blocking position,

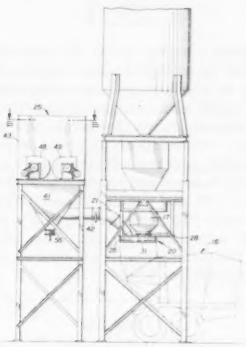
4. a fourth stage wherein said second valve means is being moved to the path blocking position while said first valve means remains near the path blocking position, and

5. a fifth stage wherein said first valve means is being moved into the path opening position while said second valve means remains in the path blocking position.

3,868,238
DUST CONTROL SYSTEM FOR BATCH PLANT CHARGING OF TRANSIT MIXERS

Albert A. Mills, Jr., Columbus, and Norman H. Koerner, Sr., Granville, both of Ohio, assignors to The Columbus Bin Company, Inc., Columbus, Ohio

Filed Mar. 29, 1974, Ser. No. 456,202
Int. Cl. B01d *46/04*
U.S. Cl. 55—273 **8 Claims**



1. In combination with a batch plant for dry-mix material having a discharge outlet through which the material is discharged into the receptacle inlet of a transit vehicle adapted to be positioned in cooperation therewith, a dust-collector shroud connected to the said discharge outlet and adapted to be connected to said receptacle inlet, a filtering unit, and means connecting said shroud to said filtering unit;

said filtering unit including a housing divided into first and second separate and independent filter chambers, said chambers having inlets and outlets and filtering means disposed therebetween;

first and second electrically-driven exhaust fans mounted in cooperation with the respective outlets of the first and second filter chambers;

a common inlet housing chamber connected to said inlets of both filter chambers;

said means connecting said shroud to said filtering unit comprising an inlet conduit connected to said shroud and to said inlet housing chamber and having an electrically-actuated inlet valve for controlling flow of dust-laden air therethrough from said shroud to said inlet chamber; and control means connected to said inlet valve and said fans comprising an electric circuit including means for sequentially driving both of said fans and opening said valve to collect dust from the shroud during discharge of material and alternately driving one of said fans and closing said valve to clean the filter material in the chamber in

which the fan is not driven by reversing air flow from the outlet of said chamber into said inlet housing chamber.

3,868,239

SORPTION PUMP

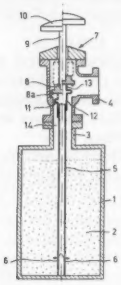
Jan Visser, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,583

Claims priority, application Netherlands, Jan. 29, 1973, 7301204

Int. Cl. B01d *53/04*

U.S. Cl. 55—389 **4 Claims**



1. In a sorption pumping device for connection to a space to be evacuated, including a housing defining therein a reservoir including an inlet passage connectible to said space, and a quantity of sorption material in said reservoir, the improvement in combination therewith wherein said material is situated at at least two relatively different levels, said device further comprising duct means extending through said reservoir and into the material and having spaced ports material for communication with said material at said different levels, and valve means in said inlet passage connected to said duct means for selectively interconnecting said space successively and directly with said different ports in said duct means and said material at said different levels.

3,868,240

METHOD OF GLASS CHARGE SHAPING AND FORMING INTO A GLASS ARTICLE

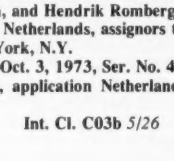
Herman Buurman, and Hendrik Romberg, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,099

Claims priority, application Netherlands, Apr. 11, 1973, 7305030

Int. Cl. C03b *5/26*

U.S. Cl. 65—127 **3 Claims**



1. A method of manufacturing hollow glass articles comprising the steps of:

severing glass charges from a stream of molten glass;

seizing said severed charges in their free fall and shaping them into blanks;

successively transferring said blanks onto the supporting surface of carriers which are traveling in a closed path and which are provided with an orifice, the blanks being transferred during said transferring step exclusively according to a two-dimensional movement pattern which extends partly parallel to the supporting surface of the carrier;

subsequently forming the blanks into hollow articles by the sagging of their central portion through the orifice of the carriers;

subjecting the sagged portion to a forming operation to produce formed articles; and

removing the articles thus obtained from the carriers.

3,868,241

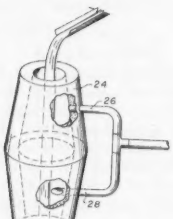
MANUFACTURE OF FUSED CAST REFRACTORY WITH STREAMS OF OXYGEN

Frank Thomas Felice, Norristown, Pa.; Robert Earl Fisher, Downers Grove, and Louis John Jacobs, Chicago, both of Ill., assignors to Combustion Engineering Inc., Windsor, Conn.

Filed June 12, 1973, Ser. No. 369,343

Int. Cl. C03b *5/16*; **C04b** *35/02*

U.S. Cl. 65—134 **2 Claims**



1. A method of producing a molten refractory material for use in forming fused cast refractories comprising the steps of:

a. providing refractory raw materials consisting essentially of alumina, zirconia and silica for producing fused cast refractories;

b. melting said refractory raw materials in an electric arc furnace having carbon electrodes whereby some of said carbon is transferred to said molten refractory;

c. flowing said molten refractory from said electric arc furnace; and

d. directing a stream of oxygen onto said molten refractory material as it is being poured.

3,868,242

MOLD FOR ELECTRIC DISCHARGE LAMP

Harald L. Witting, Burnt Hills, and John O. Fielding, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 1, 1974, Ser. No. 465,904

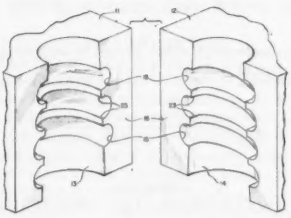
Int. Cl. C03b *9/34*

U.S. Cl. 65—360 **2 Claims**

1. A mold for making a tapered cylindrically-shaped envelope of glass, said mold comprising

first and second mold halves of a glass-molding material, said mold halves defining a mold parting plane therebetween with each of said mold halves having one half of a tapered cylindrical portion with a plurality of substantially parallel grooves formed therein, said grooves forming a helically-shaped channel of nonuniform pitch circumferentially winding around said tapered cylindrical portions, said channel of nonuniform pitch further characterized by a pitch of substantially zero degrees where

said channel intersects said mold parting plane and reaches a maximum pitch at approximately 90 degrees to



said mold parting plane, thereby enabling easy release of a glass envelope from said mold.

3,868,243

METHOD OF MAKING GRANULAR TRIPLE SUPERPHOSPHATE FERTILIZER

Robert A. MacDonald, Byram, Conn., assignor to Ferguson Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 214,375, Dec. 30, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,253

Int. Cl. C05b *1/00*

U.S. Cl. 71—41 **6 Claims**

1. The method of making granular triple superphosphate comprising the steps of

a. placing a predetermined amount of phosphoric acid in a reactor,

b. maintaining the temperature in said reactor between about 175°F and about 260°F,

c. adding sufficient comminuted phosphate rock to said reactor to form a fluid slurry which will remain fluid at said temperature between about 175°F and about 260°F but which will solidify if the temperature thereof is lowered substantially below said temperature between about 175°F and about 260°F,

d. placing a predetermined quantity of comminuted phosphate rock in an agitating mixer, at least about 85% of said comminuted phosphate rock being of a particle size small enough to pass through a 200 mesh screen, and

e. adding a sufficient amount of said slurry to said mixer to convert said predetermined quantity of phosphate rock to triple superphosphate.

3,868,244

PLANT GROWTH REGULATION

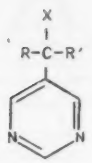
Harold M. Taylor; James D. Davenport, both of Indianapolis, and Ronald E. Hackler, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 234,338, March 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 888,949, Dec. 29, 1969, abandoned, which is a continuation-n-part of Ser. No. 829,844, May 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 685,315, Nov. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 634,074, April 27, 1967, abandoned. This application Jan. 30, 1974, Ser. No. 438,110

Int. Cl. A01n *9/22*

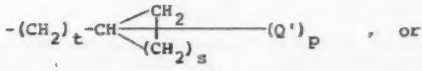
U.S. Cl. 71—76 **29 Claims**

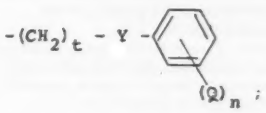
1. A method of inhibiting the intermodal growth of plants which comprises contacting the plants with an effective amount of a compound of the formula



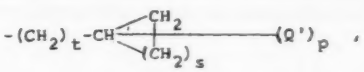
wherein

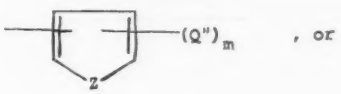
X is hydrogen, hydroxy, $N(R'')_2$, C_1–C_3 alkoxy, halo, cyano, anilino, or imidazolylthio; R is C_2–C_{11} alkyl, C_2–C_{11} alkenyl,

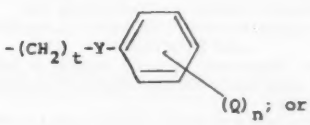




R′ is C_3–C_{11} alkyl, C_2–C_{11} alkenyl, norbornen-2-yl, 2-norbornyl, adamantyl,

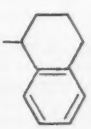


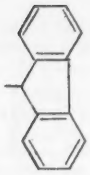




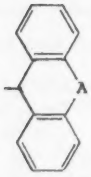
when

X is hydrogen or hydroxy, R and R′ taken together with the carbon atom to which they are attached form a ring of the fomula





, or



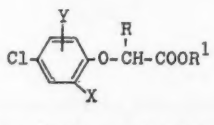
Q is C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halo, hydroxy, trifluoromethyl, C_1–C_4 alkylsulfonyl, nitro, or di(C_1–C_4 alkyl)amino, or two Q's attached to adjacent carbon atoms of a benzene ring form a methylenedioxy group;
Q′ is C_1–C_4 alkyl or methoxy;
Q″ is C_1–C_4 alkyl;
Y is oxygen, sulfur, or a carbon to carbon bond;
Z is oxygen or sulfur;
A is oxygen, sulfur, CH_2, or CH_2–CH_2;
R″ is hydrogen or C_1–C_4 alkyl;
n is 0 to 5;
m is 0 to 2;
p is 0 to 3;
s is 1 to 6; and
t is 0 to 5,
and the nonphytotoxic acid addition salts thereof.

3,868,245
SELECTIVE HERBICIDE MIXTURES OF SUBSTITUTED PHENOXYALKANOIC COMPOUNDS AND 3-ALKYL-2,1,3-BENZOTHIAZINONE-(4)-2,2-DIOXIDES AND PROCESSES

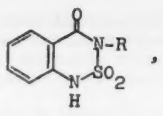
Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Continuation-in-part of Ser. No. 55,277, July 15, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,190
Claims priority, application Germany, July 24, 1969, 1937551
Int. Cl. A01n 9/12
U.S. Cl. 71—91 **8 Claims**

1. A selective herbicide composition containing a herbicidally effective amount of a mixture of
a. a compound having the formula



where X denotes chlorine or methyl, Y denotes chlorine or hydrogen, R denotes hydrogen or methyl, R^1 denotes hydrogen, an alkyl radical or an alkoxy alkyl radical, or a carboxylic acid salt thereof and
b. a compound having the formula



where R denotes methyl, ethyl, propyl or isopropyl, or a salt thereof in a weight ratio of 1:5 to 5:1.

3,868,246
PELLET PRODUCTION PROCESS

Karl Heinz Boss, Bad Homburg, Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 165,284, July 22, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,919
Int. Cl. F26b 3/22; C21b 1/02
U.S. Cl. 75—3 **6 Claims**

1. In the method of heat indurating green pellets comprising the steps of depositing green pellets on a traveling grate and thereafter drying, calcining and cooling said pellets, an improved drying method comprising:
a. depositing a predetermined portion of a total charge of green pellets on the receiving end of a traveling grate;
b. moving said pellets through a first downdraft drying zone wherein heated gases are passed downwardly through the pellets, said heated gases being at a sufficient temperature to drive-off entrained moisture from said pellets but at a temperature insufficient to calcine said pellets;
c. depositing additional green pellets on top of the first-dried pellets; and
d. subjecting the bed to a downdraft flow of heated gases at the said temperature before the first-dried pellets have cooled to the level of the dew point of the moisture-laden gases that have contacted the pellets last deposited on the bed.

3,868,247
STEEL PRODUCTION IN AN UPRIGHT ROTATING VESSEL

Aldo Ramacciotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Continuation of Ser. No. 199,024, Nov. 15, 1971, abandoned. This application May 28, 1974, Ser. No. 474,088
Claims priority, application Italy, Dec. 5, 1970, 55212/70
Int. Cl. C21c 7/00
U.S. Cl. 75—60 **1 Claim**

1. A process for the production of steel by melting and refining of a metallic charge containing a variable percentage of carbon in a vertical converter having a vertical axis, comprising establishing a charge of solid ferrous metal and coke in said vertical converter, rotating the converter about said vertical axis, introducing and burning hydrocarbon fuel with primary oxygen in the vicinity of the charge to ignite the coke, then decreasing the flow rate of said primary oxygen to create a reducing atmosphere in a reducing zone immediately above and in contact with the charge and introducing secondary oxygen into the converter remote from the charge to maintain an oxidizing atmosphere in an oxidizing zone above said reducing zone and out of contact with said charge and to complete the combustion of gases from said reducing atmosphere in order to supply heat to the charge until the charge is melted and the combustion of the coke is over, and then adjusting the flow rate of said primary oxygen to reduce the carbon content of the melted charge to produce steel.

3,868,248

DEOXIDISING MOLTEN NON-FERROUS METALS

Max Gerhard Neu, Nechells, England, assignor to Foseco International Limited, Birmingham, England

Filed Oct. 2, 1972, Ser. No. 294,071

Claims priority, application Great Britain, Oct. 6, 1971, 46500/71

Int. Cl. C22b *15/00*

U.S. Cl. 75—76 2 Claims

1. In the refining of copper wherein air optionally enriched with oxygen is blown into molten copper or matte, the improvement which comprises continuing to blow air optionally enriched with oxygen into the molten copper or matte until the residual oxygen content of the molten copper reaches a value of not more than 0.3 percent by weight, and thereafter adding to the molten copper a treatment agent in the form of a body of porous coke impregnated with sodium, potassium, calcium, magnesium or an alloy containing at least 20 percent of one or more of these.

3,868,249

ALLOY FOR ELECTRICAL LEADS

Guy Darrell Hufford, Jr., Thousand Oaks, and John Leland Teets, Westlake Village, both of Calif., assignors to Wilkinson Dental Manufacturing Co., Inc., Westlake Village, Calif.

Filed Mar. 14, 1974, Ser. No. 451,001

Int. Cl. C22c *5/00*

U.S. Cl. 75—134 N 2 Claims

1. An alloy for electrical leads for securement in a ceramic base structure and subject to firing of the ceramic base comprising by weight, from 44 percent to 54 percent gold 11 percent to 21 percent silver, 27.2 percent to 37.2 percent palladium, and 0.8 percent to 2.8 percent ruthenium.

3,868,250

HEAT RESISTANT ALLOYS

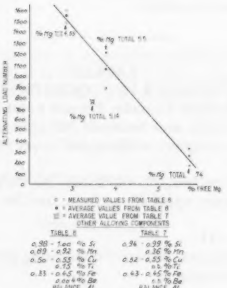
Paul Zimmermann, Grimmlinghausen, Germany, assignor to Honsel-Werke AG, Meschede-Ruhr, Germany

Filed June 7, 1972, Ser. No. 260,556

Claims priority, application Germany, June 14, 1971, 2129352

Int. Cl. C22c *21/04*; C22f *1/04*; F02f *1/24*

U.S. Cl. 75—147 9 Claims



1. A high-strength manganese-containing Al-Mg-Si alloy having a free magnesium content of 1.5 to 4%, said alloy consisting essentially of 0.6 to 1.8% manganese, 2 to 7% magnesium, 0.6 to 2.5% silicon, 0.1 to 0.3% titanium, and having been subjected to one of the following steps (a) and (b):

a. a solution treatment up to 565° C maximum;

b. a corresponding solution treatment with subsequent age-hardening at temperatures not exceeding the hardness maximum.

3,868,251

ORGANIC PHOTOCONDUCTIVE COMPOSITION CONTAINING CHLORINATED PARAFFIN

Shoichi Matsumoto, and Kazuyoshi Saito, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 23, 1973, Ser. No. 381,746

Claims priority, application Japan, July 28, 1972, 47-75131

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 5 Claims

1. A photoconductive composition for use in electrophotography comprising 100 parts by weight of an organic photoconductor and 20 to 50 parts by weight of chlorinated paraffin wherein said chlorinated paraffin contains 40 to 65% by weight of chlorine and wherein said chlorinated paraffin contains eight to 18 carbon atoms.

3,868,252

PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERIC OXIDANTS

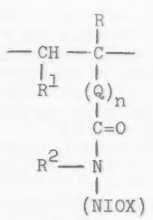
Gerald A. Campbell; Hyman L. Cohen; Hans G. Ling, and Ignazio S. Ponticello, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1973, Ser. No. 412,081

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 19 Claims

1. A photographic element comprising a support having thereon at least one photosensitive silver salt emulsion layer and at least one layer containing a water-soluble polymer comprising at least 40 mole percent of a recurring unit having the formula:



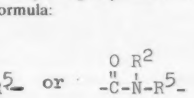
wherein:

n is an integer having a value of 0 or 1;

Q represents a bivalent linking group of the formula:

$$-R^3-(L)_m-(R^4)_p-$$

in which R^3 and R^4 each represent an alkylene group, an arylene group or an alkarylene group, and R^3 can also represent a group of the formula:



in which R^5 has the same definition as R^4 and in which the carbonyl moiety is attached directly to the polymeric backbone:

m and *p* each represent an integer having a value of 0 or 1; and

L represents an onium salt group;

R represents a hydrogen atom or an alkyl group;

R^1 represents a hydrogen atom, a carboxy group or when taken together with R^2 represents a linking carbonyl group;

R^2 represents a hydrogen atom, an alkyl group, or when taken together with R^1, R^2 represents a carbonyl group; and

(NIOX) represents a stable free nitroxyl radical;
said polymer further comprising at least 5 mole percent of a recurring unit having appended therefrom a water solubilizing group.

3,868,253

PROCESS FOR THE RAPID PROCESSING OF SILVER DYE BLEACH MATERIAL

Max Marthaler, Marly-le-Petit, and Ulrich Frauchiger, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Feb. 16, 1973, Ser. No. 333,249
Claims priority, application Switzerland, Feb. 28, 1972, 2770/72
Int. Cl. G03c *7/00, 5/32, 5/38*
U.S. Cl. 96—53 **13 Claims**

1. Process for the rapid processing of silver dye bleach materials which comprises using the bath sequence (1) silver developing bath, (2) dye bleach bath, (3) bleach-fixing bath, (4) silver halide fixing bath and (5) soaking bath, with both the silver developing bath (1) and the dye bleach bath (2) containing a dye bleach catalyst and the silver dye bleach material to be processed passing from a silver developing bath (1) directly into a dye bleach bath (2), the entire processing, from entry into the first bath (1) to leaving the last bath (5) lasting at most 6 minutes at temperatures of 20° to 50°C and the dwell time in the individual baths being at most 2 minutes.

3,868,254

POSITIVE WORKING QUINONE DIAZIDE LITHOGRAPHIC PLATE COMPOSITIONS AND ARTICLES HAVING NON-IONIC SURFACTANTS

Anton Wemmers, Den Hoorn, Netherlands, assignor to GAF Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,326
Int. Cl. G03f *7/08;* **G03c** *1/54*
U.S. Cl. 96—75 **6 Claims**

1. In a positive working, photosensitive lithographic composition, for use as a coating on a hydrophilic substrate, said composition having a quinone diazide sensitizing agent and a novolak resin binder, the improvement comprising: the employment of a non-ionic surfactant as a developing additive in said composition to impart enhanced developability characteristics, said non-ionic surfactant being a reaction product of ethylene oxide and a compound selected from the group consisting of alkyl phenols and dialkyl phenols.

6. A light sensitive, positive working, lithographic printing plate comprising: a hydrophilic support coated with the composition as defined in claim **1.**

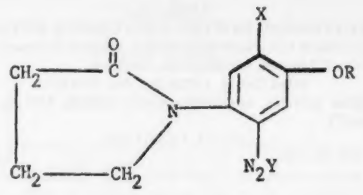
3,868,255

DIAZONIUM SALTS AND DIAZOTYPE MATERIALS

Sidney George Garnish, and Rafiqul Islam, both of London, England, assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 56,732, July 20, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,854
Claims priority, application Great Britain, July 23, 1969, 37095/67
Int. Cl. G03g *1/54;* **C07c** *113/04*
U.S. Cl. 96—91 R **10 Claims**

1. Diazonium compounds of the general formula:



wherein R is selected from the group consisting of alkyl, hydroxyalkyl, aryl, or aralkyl, Y is an anion, and X is a radical selected from the group consisting of pyrrolidino, morpholino, piperidino and piperazino.

2. Diazotype materials comprising a support having a light-sensitive acid stabilized layer containing an azo coupler a light-sensitive diazonium compound taken from the group of compounds claimed in claim **1.**

3,868,256

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING A CYANINE DYE HAVING A PYRAZOLE[5, 1B]QUINAZOLONE NUCLEUS

Akira Sato; Akira Ogawa; Keisuke Shiba, and Masanao Hinata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 16, 1973, Ser. No. 379,887
Claims priority, application Japan, July 14, 1972, 47-70499
Int. Cl. G03c *1/28, 1/08*
U.S. Cl. 96—100 **11 Claims**

1. A silver halide emulsion for direct positive use comprising fogged silver halide grains and containing at least one cyanine dye in which the 3-position carbon atom in the pyrazole [5, 1-b] quinazolone nucleus thereof and the 1-, 2-, 3-, or 4-position of the cyanine heterocyclic nucleus thereof is directly linked or linked by way of a methine chain with 2 or 4 methine groups, with the proviso that the linking at the 4-position being only when the cyanine heterocyclic nucleus is a quinoline or a pyridine nucleus, and the linking at the 1- and 3-position being only when the cyanine heterocyclic nucleus is an isoquinoline nucleus.

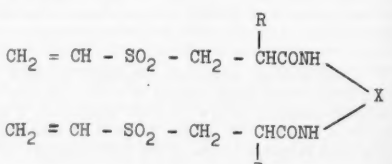
3,868,257

HARDENERS FOR PHOTOGRAPHIC GELATIN

Shoichi Horii; Shoji Yamada; Kiyoshi Futaki; Akira Tanaka; Mamoru Sekido, and Sadayuki Miyazawa, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 319,025
Claims priority, application Japan, Dec. 30, 1971, 47-2346
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **7 Claims**

1. A composition of matter comprising gelatin and a hardener of the formula:



(Wherein R is a member selected from the group consisting of hydrogen and methyl group and X is a lower alkylene group 1 to 6 carbon atoms).

3,868,258

FIREPROOFING COMPOSITION AND METHOD

Masami Tomikawa; Yutaka Mugino; Akiji Tsunoda; Hideo Ohkawa, and Kazuhisa Kaneda, all of Chiba-ken, Japan, assignors to Idemitsu, Kosar Kabushiki-Kaisha (Idemitsu Kosan Co., Ltd.), Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,480
Int. Cl. C09d *1/02, 5/18*
U.S. Cl. 106—15 FP 7 Claims

1. A fireproof composition comprising the hardened reaction product of a homogeneous mixture consisting essentially of calcium sulfite and water glass.

3,868,259

DENTURE ADHESIVE PREPARATION

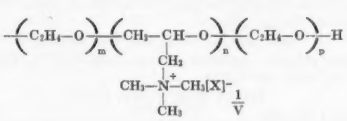
James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,623
Int. Cl. C08b *21/32*
U.S. Cl. 106—35 8 Claims

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0% to about 80% by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material having the formula:

wherein R_{cell} is the residue of an anhydroglucose unit, y is an integer having a value of from about 1,000 to about 5,000, and each R individually represents a substituent group of the general formula:



wherein:

m is an integer having a value of from zero to 10;
n is an integer having a value of from zero to 3;
p is an integer having a value of from zero to 10;
X is an anion; V is an integer which is equal to the valence of X; the average value of n anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value of $m+p$ per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 20% to about 99% by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of carboxymethylcellulose gum and cellulose sulfate gum.

3,868,260

DENTURE ADHESIVE PREPARATION

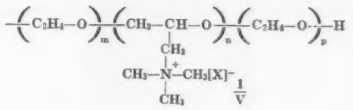
James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,624
Int. Cl. C08b *21/32*
U.S. Cl. 106—35 8 Claims

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0 to about 80 percent by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material having the formula:

wherein R_{cell} is the residue of an anhydroglucose unit, y is an integer having a value of from about 1,000 to about 5,000, and each R individually represents a substituent group of the general formula:



wherein:

m is an integer having a value of from zero to 10;
n is an integer having a value of from zero to 3;
p is an integer having a value of from zero to 10;
X is an anion; V is an integer which is equal to the valence of X; the average value of n per anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value of m+p per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 20 to about 99 percent by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of gum karaya, gum arabic, gum Shiraz, gum tragacanth, pectin, pectinates, algin and alginates.

3,868,261

REFRACTORY MOTOR

Nicholas Cassens, Jr., Pleasanton, and Joseph E. Neely, Los Gatos, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 15, 1973, Ser. No. 416,090
Int. Cl. C04b *35/42*
U.S. Cl. 106—59 14 Claims

1. A heat setting refractory mortar composition consisting essentially of: (1) from 85 to 99.4% prereacted magnesia-chrome grain containing from 40% to 80% MgO, said grain being substantially all finer than 35 mesh and containing from 25 to 75% −325 mesh material; (2) up to 13% Cr_2O_3, substantially all of which passes a 325 mesh screen; (3) from 0.5 to 1.5% dextrin; and (4) from 0.1 to 0.5% methyl cellulose; the amount of Cr_2O_3 and the percentage of prereacted grain finer than 325 mesh being such that the linear shrinkage of the mortar upon heating to 1650°C is not over 5%; all percentages of the materials in the composition being by weight and based on the total weight of the composition.

3,868,262

METHODS IN THE PRODUCTION OF PLANT-MIXED ASPHALT CONCRETE

Karl Gunnar Ohlson, Vikingaleden 28, Hassleholm, Sweden

Continuation-in-part of Ser. No. 193,205, Oct. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 137,701, April 26, 1971, abandoned. This application July 20, 1973, Ser. No. 381,130

Int. Cl. C08h *13/00, 17/04*

U.S. Cl. 106—281 R 4 Claims

1. In a method for the production of stable homogeneous a plant-mixed asphalt mix for paving purposes by mixing a batch of bituminous binder and a batch of mineral aggregate in a mixer at a temperature at which said binder has a viscosity of at least 150 cSt, said batch of mineral aggregate containing both particles above 2 mm and particles within the range of 2–0.5 mm and also smaller particles, said batch of mineral aggregate being divided into a first and a second part, said first part being first mixed in the mixer with said batch of binder whereafter said second part is introduced into the mixer and the mixing is continued until mixing is completed, the improvement comprising dividing said batch of mineral aggregate into said first and second parts in such a way that said second part contains particles of said mineral aggregate batch within the range 2–0.5 mm and smaller, whereby said bituminous binder and mineral aggregate produce a mixture having high homogeneity without separations in the mineral aggregate composition and without agglomeration of particle sizes within the range 2–0.5mm.

3,868,263

METHOD OF MAKING A PAVING COMPOSITION

Kenneth E. McConnaughay, P.O. Box 1457, Lafayette, Ind. 46202

Filed June 22, 1970, Ser. No. 48,512

Int. Cl. C08h *13/00, 17/02, 17/22*

U.S. Cl. 106—281 4 Claims

1. A method of making a paving composition, comprising the steps of mixing with an aggregate a primary bituminous binder to produce a premix of binder-coated aggregate, said primary binder consisting of a bituminous material selected from the class consisting of asphalt, tar, pitch, emulsified and cut back forms thereof, and combinations thereof, and from about **0.05** percent to about **10** percent of an adhesion promoter based upon the weight of the nondistillable solids in said bituminous material, said premix containing from about 1 percent to about 3.5 percent of nondistillable solids from said primary binder based upon the weight of said aggregate, said adhesion promoter being selected from the class consisting of the primary, secondary, tertiary, and quartenary amines and imidazolines; amines and imidazolines reacted with hydrochloric, sulfuric, acetic and fatty acids; metal soaps; rosins, fatty acids and pitches reacted with aluminum sulfate, sodium chromate, potassium chromate, chromic acid, hydrated lime, ammonia, or the hydroxides and halides of the alkali metals and alkaline metal earths; and the like, allowing said primary binder to cure for at least 24 hours on the aggregate in said premix and adhere to said aggregate, and then mixing with said premix a secondary bituminous binder to form said paving composition, said paving composition containing from about 2 percent to about 7 percent of nondistillable solids from said secondary binder based upon the weight of said aggregate, said primary binder having a kinematic viscosity at 140° F. of from about 20 cSt. to about 6,000 cSt. and said secondary binder having an absolute viscosity at 140° F. of from about 200 poises to about 4,000 poises.

3,868,264

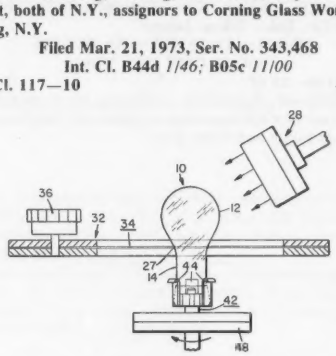
METHOD OF APPLYING LIGHT DIFFUSING COATING TO INTERIOR OF INCANDESCENT LAMP ENVELOPE

Howard E. Kellberg, Corning, and Dale F. Maynard, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,468

Int. Cl. B44d *1/46;* B05c *11/00*

U.S. Cl. 117—10 4 Claims



1. A process for providing selected portions only of the interior surface of a glass lamp envelope with a light-diffusing coating comprising the steps of:

a. applying an aqueous slurry coating consisting essentially of clay and a high majority by weight of water, to the entire interior surface of a glass incandescent envelope having an upper, closed bulbous portion and a lower open end neck portion adjacent said closed bulbous portion;

b. maintaining said envelope in an upright, vertical open-end-down position;

c. placing a condensing means below said bulbous portion and in close proximity to an area corresponding to an annular surface band on the inner surface of the upper end of said neck portion;

d. applying heat solely to said closed bulbous portion to vaporize water from said slurry coating on the interior surface of said closed bulbous portion to dry said slurry coating on said closed portion; and

e. condensing on said annular surface band of said neck portion the water vaporized from said slurry coating on said closed bulbous portion at a rate sufficient to cause the vaporized water to run down said open end neck portion and substantially remove the slurry coating from said open end neck portion inner surface blow said condensing means.

3,868,265

METHOD OF MANUFACTURING COATED STEEL PIPES

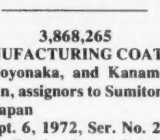
Tomoharu Sakai, Toyonaka, and Kaname Matsui, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Sept. 6, 1972, Ser. No. 286,825

Claims priority, application Japan, Sept. 6, 1971, 46-69112; Sept. 18, 1971, 46-72821

Int. Cl. B44c *1/094, 1/114*

U.S. Cl. 117—18 3 Claims



1. A method of producing coated steel pipes, comprising the steps of: preheating a steel pipe to a predetermined temperature; spraying a powdery modified thermoplastic synthetic

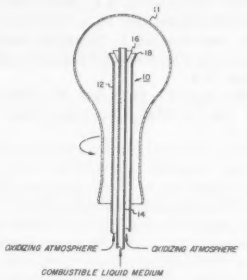
resin over the outer surface of such preheated steel pipe, so as to form a sticky thin film having a thickness of 0.1–0.3mm; forming an inner layer on such steel pipe by coating a non-rigid synthetic resin in a sticky state onto the sticky thin film by the use of a first extruding head; forming an outer layer on such steel pipe by coating a rigid synthetic resin in a sticky state and of a chemically similar type of material as that of the non-rigid synthetic resin onto the inner layer by use of a second extruding head, thereby forming a blended intermediate layer between the inner and outer layers; and, forcibly pressing the inner and outer layers onto the entire surface of such steel pipe by the use of a plurality of press rollers made of a heat-resisting rubber with a hardness of 30 to 70.

3,868,266

ALUMINA COATINGS FOR AN ELECTRIC LAMP

David C. Henderson, Chagrin Falls, and Kenneth M. Maloney, Shaker Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed June 21, 1973, Ser. No. 372,132
Int. Cl. C03c *17/06*
U.S. Cl. 117—18 **9 Claims**



1. A method of depositing a light-diffusion coating upon the internal surface of a lamp glass envelope which comprises:
   a. forming a combustible liquid medium with a liquid organic aluminum compound or by dissolving a solid organic aluminum compound in an organic liquid solvent
   b. burning said combustible liquid medium within the lamp glass envelope utilizing an oxygen containing atmosphere to form a moving gas stream having spherical alumina particles with an individual particle size range from approximately **400** A to **5,000** A in diameter being suspended in said gas stream, and
   c. controlling the flow rate of the moving gas stream within the lamp glass envelope to uniformly deposit the alumina particles upon the untreated internal surface of the lamp glass envelope.

3,868,267

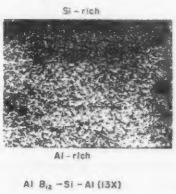
METHOD OF MAKING GRADIENT CERAMIC-METAL MATERIAL

George E. Gazza, Sudbury, Mass., and Michael W. Lindley, Holton Heath, England, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1972, Ser. No. 305,047
Int. Cl. C03c *17/06*
U.S. Cl. 117—22 **7 Claims**

1. A method for the fabrication of a ceramic-metal material comprising the steps of:
   a. selecting two separate volumes of a ceramic material said separate volumes having different particle sizes,
   b. placing said separate volumes of a ceramic material adjacent and abutting each other,
   c. cold compressing said separate volumes together to form a porous gradient ceramic compact having an interface at the points of abuttment of said separate volumes,
   d. contacting the first of said separate volumes of said ceramic compact with a first metal powder,
   e. heating in a vacuum said first separate volume in contact with a first metal powder above the melting point of said first metal powder so that the molten said first metal powder impregnates the said first separate volume by infiltration,
   f. contacting second said separate volume of said ceramic compact with a second metal powder having a lower melting point than the said first metal powder, and
   g. heating in a vacuum said second metal powder in contact with said second separate volume above the melting point of said second metal powder but below the melting point of said first metal powder so that the molten said second metal powder impregnates the second said separate volume by infiltration.

5. A method for the fabrication of a ceramic-metal material comprising the steps of:
   a. selecting two separate volumes of a ceramic material said separate volumes being different ceramic materials,



   b. placing said separate volumes of a ceramic material adjacent and abutting each other,
   c. cold compressing said separate volumes together to form a porous ceramic compact having an interface at the points of abuttment of said separate volumes of different ceramic materials,
   d. contacting the first of said separate volumes of said ceramic compact with a first metal powder,
   e. heating in a vacuum first of said separate volume in contact with a first metal powder above the melting point of said first metal powder so that the molten said first metal powder impregnates the said first separate volume by infiltration,
   f. contacting the second of said separate volume of said ceramic compact with a second metal powder having a lower melting point than the said first metal powder, and g. heating in a vacuum said second separate volume of said ceramic compact in contact with said second metal powder above the melting point of said second metal powder but below the melting point of said first metal powder so that the molten said second metal powder impregnates the said second separate volume by infiltration.

3,868,268

UNDER-WATER SPRAYING

Nicholas Norbert Tusch, London; Robert Ian Watson, Blackburn, and Jack Taylor, Accrington, all of England, assignors to Colebrand Limited, London, England

Division of Ser. No. 174,445, Aug. 24, 1971, Pat. No. 3,788,273. This application Aug. 27, 1973, Ser. No. 391,714
Int. Cl. B05c *5/02*
U.S. Cl. 117—104 R **14 Claims**

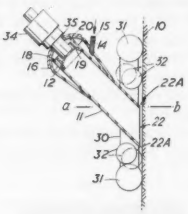
1. Method of coating a submerged surface by spraying with a liquid, comprising the steps of;
   passing over the surface the margin of an opening which is of relatively short dimension in the direction of such

passage and of relatively long dimension in the direction across such passage,

maintaining the margin so that at least its trailing edge of longer dimension in relation to the sense of direction of passage is spaced from the surface by a gap which leads from the opening of an otherwise water-tight hollow shield,

supplying into the shield compressed air through its inlet at a sufficient pressure and rate to keep the interior of the shield purged of water whilst escaping through the gap,

and projecting the liquid to the surface from a source which is inside the shield and spaced from the surface as a spray



of droplets in a sheet-like pattern corresponding in short and long dimensions to the opening but smaller, the spray of droplets being assisted in its passage toward the opening by the compressed air,

the velocity of projection of the droplets and their mass being such that at least a majority of them penetrate the volume of intervening air maintained within the shield and such film of water as there may be on the surface so as to reach the surface and form thereon a continuous film, the gap between the surface and the margin of the opening being maintained so as to prevent water from entering the shield by the flow of compressed air passing through the gap from the shield.

3,868,269

FLAME RESISTANT ORGANIC TEXTILE THROUGH TREATMENT WITH HALOGEN CONTAINING SOLUBLE METHYLOL PHOSPHINE ADDUCTS

Donald J. Daigle, New Orleans; Wilson A. Reeves, and George L. Drake, Jr, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 141,447, May 7, 1971, Pat. No. 3,745,191. This application Dec. 15, 1972, Ser. No. 315,738

Int. Cl. C09d *5/18*

U.S. Cl. 117—136 **3 Claims**

1. A process for producing flame-resistant textiles, said process comprising:

a. impregnating a textile with a solution containing an acid-producing catalyst, an amine or amide nitrogenous compound having at least two members of the group consisting of hydrogen atoms and methylol radicals attached to trivalent nitrogen atoms, and an adduct made by reacting tris(hydroxymethyl)phosphine with an essentially mmonomeric, halogen-containing phenolic compound having at least one hydrogen atom attached to a ring carbon atom at a position ortho or para to the phenolic hydroxyl group by heating and agitating a solution containing at least an equimolar to a molar excess of said tris(hydroxymethyl)phosphine relative to said phenolic compound so that the number of methylol phosphorus radicals is greater than the number of hydrogen atoms attached to ring carbon atoms ortho or para to the phenolic hydroxyl group thereby providing an excess of methylol phosphorus radicals (PCH_2OH) in the resulting adduct; and

b. heating the impregnated textile for from about 90° to 170°C until the adduct and nitrogenous compound have reacted to produce an insoluble product.

3,868,270

FIBERS WITH FINISH CONTAINING ORGANIC PHOSPHATES AND SULPHATES

Thomas Jefferson Proffitt, Jr., Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 4, 1972, Ser. No. 311,778

Int. Cl. C08j *1/44*

U.S. Cl. 117—139.5 CQ **3 Claims**

1. A fiber coated with a finish composition consisting essentially of, by weight, from 60 to 70 percent of diethanolamine salts of a mixture of monoalkyl and dialkyl orthophosphates wherein the alkyl groups contain 8 to 14 carbon atoms, and from 40 to 30 percent of a mixture of alkyltrimethylammonium methosulfates wherein the alkyl groups contain at least 8 carbon atoms.

3,868,271

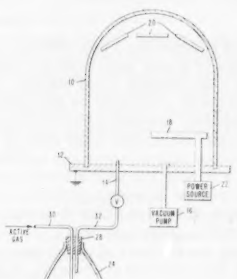
METHOD OF CLEANING A GLASS SUBSTRATE BY IONIC BOMBARDMENT IN A WET ACTIVE GAS

Neil M. Poley, and Howard L. Whitaker, both of Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 13, 1973, Ser. No. 369,620

Int. Cl. B08b *3/00;* **C03c** *23/00*

U.S. Cl. 134—1 **8 Claims**



1. In a method for cleaning a glass substrate, the steps of:

placing said substrate within an ionic bombardment apparatus;

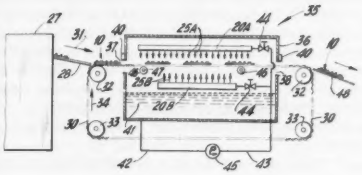
substantially filling said apparatus with a wet active gas under low pressure, said wet active gas being substantially saturated with water at 22°C; and

applying an electrical potential between an anode and a cathode within said apparatus to cause ionic bombardment of said substrate in said wet active gas.

3,868,272
CLEANING OF PRINTED CIRCUIT BOARDS BY SOLID AND COHERENT JETS OF CLEANING LIQUID

Louis V. Tardoskegyi, Montreal, Quebec, Canada, assignor to Electrovert Manufacturing Co. Ltd., Montreal, Quebec, Canada

Filed Mar. 5, 1973, Ser. No. 337,922
Int. Cl. B08b 3/02
U.S. Cl. 134—26 12 Claims

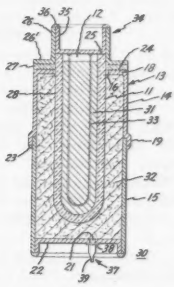


1. A method of cleaning printed circuit boards having components mounted on their upper surfaces, and which have been fluxed and soldered and have had leads of the components connected to the printed circuitry thereof by fluxing and soldering, said method comprising the steps of supporting each printed circuit board directly on a perforated support on which the printed circuit board is held initially solely by gravity; while the printed circuit board is thus supported, directing a multiplicity of closely laterally spaced, high velocity first solid and coherent jets of cleaning liquid, having a substantially continuously uniform small cross-section, perpendicularly against the entire upper surface of the printed circuit board and against the components thereon, to impact the board at high velocity to penetrate the overlying liquid residue, resulting from the fluxing and soldering, on the upper surface of the printed circuit board and to be deflected laterally over the board surface to sweep the liquid off the printed circuit board to clean the upper surface of the printed circuit board, and to impinge laterally against the components and the component leads to clean the same; and while the printed circuit board is pressed against the perforated support by the first solid and coherent high velocity liquid jets, directing a multiplicity of closely laterally spaced, high velocity second solid and coherent jets of cleaning liquid, having a substantially continuously uniform small cross-section, perpendicularly against the entire bottom surface of the printed circuit board, to impact the board at high velocity to penetrate the liquid residue, resulting from the fluxing and soldering, on the bottom surface of the printed circuit board and to be deflected laterally over the board surface to sweep the liquid off the printed circuit board to clean the bottom surface thereof; the perforated support being moved along a path of travel intersecting the first and second solid coherent jets to bring the printed circuit boards into operative association with the jets and to move the printed circuit boards out of operative association with the jets; the solid coherent jets being arranged in closely uniformly laterally spaced relation in successive rows extending laterally of the path of travel, with each successive row being progressively laterally offset through a small distance relative to the immediately preceding row whereby substantially every discrete area on the board surfaces is impacted by at least one jet.

3,868,273
BATTERY CASING AND SEALED PRIMARY SODIUM-HALOGEN BATTERY

Fritz G. Will, Scotia, and Robert R. Dubin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,419
Int. Cl. H01m 23/00
U.S. Cl. 136—83 R 3 Claims



1. A sealed primary sodium-halogen battery comprising an inner casing of a solid sodium ion-conductive material with one open end, an electronic conductor within the interior surface of the inner casing and extending outwardly through the open end of the inner casing, an outer metallic casing comprising an upper portion and a lower portion, the upper portion with opposite open ends, an inwardly extending flange affixed to the upper portion at its first open end, the lower portion with an open end and a closed end, the upper and lower portions joined together at their associated open ends, the outer metallic casing surrounding the inner casing with the exterior surface of the flange on a lower plane than the surface of the open end of the inner casing and spaced from the inner casing, a metallic closure consisting of an insert portion and of a cap portion, the insert portion sealing the open end of the inner casing, the cap portion with a flange positioned adjacent the flange of the upper portion of the outer metallic casing, a low single temperature melting glass seal sealing together the adjacent flanges of the upper portion of the outer metallic casing and of the cap portion of the insert and sealing the flanges to the outer wall of the inner casing adjacent its open end, the electronic conductor within the inner casing and extending outwardly through the open end of the inner casing affixed to the insert portion, an anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte in one of the casings, and a cathode in the other casing, the cathode comprising a mixture of bromine and a mixture of bromine and iodine with from 5 to 60 weight percent iodine in electrically conductive material and with dissolved small amounts of additives.

3,868,274
METHOD FOR FABRICATING MOS DEVICES WITH A MULTIPLICITY OF THRESHOLDS ON A SINGLE SEMICONDUCTOR SUBSTRATE

Robert J. Hubar, Bountiful; Kent F. Smith, Salt Lake City; James N. Fordemwalt, Salt Lake City, and John W. Hanson, Salt Lake City, all of Utah, assignors to General Instrument Corporation, Newark, N.J.

Filed Jan. 2, 1974, Ser. No. 430,025
Int. Cl. H01l 7/00
U.S. Cl. 148—1.5 19 Claims

1. A process for forming metal oxide semiconductor devices having a multiplicity of threshold voltages on a single semiconductor substrate comprising the steps of doping selected portions of the exposed substrate with a dopant of conductivity-determining type opposite the conductivity type of the substrate to form source and drain regions for a plurality of semiconductor devices, introducing a first conductivity-

determining type impurity into the substrate at the surface thereof in regions corresponding to first selected devices and not in regions corresponding to second selected devices, and introducing a second conductivity type determining impurity into the substrate at the surface thereof in regions corresponding to said second selected devices, and forming the source, drain and gate electrodes for each device.

3,868,275

MANUFACTURE OF SILVER-CADMIUM OXIDE WIRE

Loren Godfrey, Morristown, and Krishnamurthy Vaithinathan, Edison, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed June 12, 1973, Ser. No. 369,317
Int. Cl. C23c *11/00*; C21d ; C22c *5/00*
U.S. Cl. 148—6.3 22 Claims

1. A method for the manufacture of silver-cadmium oxide wire having the diameter D_f which comprises forming from silver-cadmium alloy wire having the diameter from about 1.5 to about 3 D_f, subjecting the resulting formed wire to a first stage oxidation at a temperature in the range from about 1,450° to about 1,550°F. in contact with air or oxygen-enriched air or oxygen for a period of time to effect oxidation of the wire to about 15–30% of the matrix area thereof, drawing the resulting first stage oxidized wire to a diameter in the range from about 1.2 to about 2 D_f, subjecting the thus-drawn first stage oxidized wire to a second stage oxidation at a temperature in the range 1,450°–1,550°F. in contact with air or oxygen-enriched air or oxygen for a period of time sufficient to effect oxidation of about 30–50% of the matrix area thereof, drawing the wire resulting from the second stage oxidation to a diameter in the range 1.1–1.5 D_f, subjecting the thus-drawn second stage oxidized wire to a third stage oxidation at a temperature in the range 1,450°–1,550°F. in contact with air or oxygen-enriched air or oxygen until 100% of the matrix area of the wire has been oxidized, subjecting the resulting third stage oxidized wire to drawing to about D_f.

3,868,276

PROCESS FOR TREATING METAL ARTICLES

Malcolm H. Shatz, Williamsville, N.Y., and Edward Leon, Parkersburg, W. Va., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 12, 1973, Ser. No. 323,176
Int. Cl. C23f *7/08*
U.S. Cl. 148—6.15 R 8 Claims

1. A process for treating surfaces of zinc, aluminum, ferrous metal and alloys of these to render them corrosion-resistant, paint-receptive and paint-retentive which comprises

a. applying to said surface a non-aqueous phosphatizing composition which consists essentially of 0.1 to 2.0 percent by weight phosphoric acid, 3 to 10 percent by weight of a novolac phenol-formaldehyde resin having a molecular weight of from about 300 to 5000 and a non-aqueous solvent for said phosphoric acid and said resin, said phosphatizing composition being applied in an amount sufficient to provide on said surface a resin coating weight of from about 4 to 400 milligrams per square foot and

b. thereafter, heating the thus-treated surface at a temperature of at least about 190°C in the presence of an oxygen-containing atmosphere for a period of from about 15 seconds to 5 minutes.

3,868,277

METHOD OF PRODUCING A STEEL PRODUCT HAVING AN OXIDATION-RESISTANT COATING

Vincent Marguerite Leroy, Liege, and Roland Cesar Amand Liesenborghs, Sclessin, both of Belgium, assignors to Societe Anonyme Cockerill-Ougree-Providence et esperance-Longdoz en Abrege Cockerill, Seraing, Belgium

Filed Jan. 30, 1974, Ser. No. 437,916
Claims priority, application Belgium, Jan. 30, 1973, 79475
Int. Cl. C23c *13/02*
U.S. Cl. 148—12.1 8 Claims

1. A method of producing a steel product having a decarburized oxidation-resistant coating, comprising the steps of depositing on a mild steel substrate a coating of at least one oxidation-resistant material selected from the group consisting of the metals Cr, Ni, Co, and Mo, alloys of at least two of these metals with each other, and alloys of at least one of these metals with iron or other elements; and then subjecting the coated substrate to heat treatment to cause diffusion of constituents of the substrate and coating, the heat treatment comprising the following three stages in sequence;

a. a preliminary diffusion stage in a dry hydrogen atmosphere;

b. a decarburization stage in a decarburizing atmosphere; and

c. a final diffusion stage in a dry hydrogen atmosphere.

3,868,278

DOUBLY ORIENTED COBALT IRON ALLOYS

Karl Foster, and Donald R. Thornburg, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 228,070, Feb. 22, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,766
Int. Cl. C04b *35/00*
U.S. Cl. 148—31.55 4 Claims

1. An alloy member which exhibits improved permeabilities at low field strengths resulting from crystallographic orientation compared to unoriented magnetic material of the same chemical composition consisting essentially of from about 5 percent to about 35 percent cobalt, less than 0.3 percent chromium, up to 0.3 percent manganese, up to 3 percent silicon, less than 0.03 percent carbon and the balance iron with incidental impurities, said alloy having a primary recrystallized microstructure in which a major proportion of the grains exhibit a (100) texture within 10° of the surface of the alloy and in which a major proportion of the oriented grains have cube or edges of their crystal lattices aligned within 10° of the rolling direction.

3,868,279

HIGH DAMPING COPPER-MANGANESE-ALUMINUM ALLOY

Joseph F. Nachman, and Alvin N. Hammer, both of San Diego, Calif., assignors to International Copper Research Association Inc., New York, N.Y.

Division of Ser. No. 187,811, Oct. 8, 1971, abandoned. This application Nov. 17, 1972, Ser. No. 307,363
Int. Cl. C22c *9/00*; C22f *1/08*
U.S. Cl. 148—160 4 Claims

3. The method of increasing the mechanical damping properties of an alloy consisting essentially of 32 to 42 percent by weight manganese, 2 to 4 percent by weight aluminum, and the balance copper which comprises annealing the alloy at a temperature in the range from 1200°F to 1400°F., then quenching the alloy to room temperature, then reheating the alloy to a temperature in the range from 400°F. to 550°F for a period of time from 12 to 20 hours, then further aging at a temperature in the range from 800 to 900°F for a period of time from 1½ hours to 4 hours, and then cooling to room temperature.

3,868,280
METHOD OF FORMING ELECTRIC INSULATING FILMS ORIENTED SILICON STEEL

Takaaki Yamamoto, 1420-5 Hattanda, Oaza Ohura, Yawata-ku; Kaneo Akanuma, 2406 Oaza Hikino, Yawata-ku, and Osamu Tanaka, 1103 Shimo-Kojiyaku, Yawata-ku, all of Kitakyushu, Japan

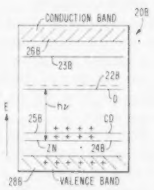
Continuation of Ser. No. 207,524, Dec. 13, 1971, abandoned, which is a division of Ser. No. 781,963, Dec. 6, 1968, Pat. No. 3,627,524. This application Aug. 16, 1973, Ser. No. 388,790
Claims priority, application Japan, Dec. 12, 1967, 42-79243
Int. Cl. Ho1f *1/04*
U.S. Cl. 148—113 **6 Claims**

1. A method for producing an electrical insulation film on an oriented cold-rolled silicon steel sheet containing 0.01 to 0.09 wt percent sol. Al, consisting essentially of the steps of first subjecting the silicon steel sheet to a heat-treatment at a temperature of 700° to 900°C in a reducing atmosphere of either hydrogen or an atmosphere containing dissociated ammonia having a dew point of 55° to 70°C for at least one minute; applying to the surface of the steel sheet an aqueous slurry of a mixture of (1) 2 to 40 parts by weight of at least one compound selected from the group consisting of an oxide of Ti and a hydroxide of Ti, and (2) 100 parts of by weight of a compound selected from the groups consisting of an oxide of Mg and a hydroxide of Mg; drying the steel sheet coated with the slurry, and annealing the said steel sheet in a hydrogen-containing atmosphere at a temperature above 1,100°C.

3,868,281
LUMINESCENT DEVICE AND METHOD THEREFOR

Thomas Nolen Morgan, Carmel, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 742,817, July 5, 1968, abandoned. This application May 24, 1973, Ser. No. 363,679
Int. Cl. H05b *33/00*
U.S. Cl. 148—190 **2 Claims**



1. Method of controlling the efficiency of emitted recombination radiation from a luminescent device comprising a semiconductor GaP crystalline region having a deep level dopant impurity oxygen of one conductivity type in a concentration of approximately 10^{16} to 10^{17} atoms/cc^3 and being susceptible of storing recombination energy in electron-hole pairs, said device having substantially only one predominant peak of emitted recombination radiation corresponding to zinc-oxygen pairs of atoms comprising the steps of:

doping said crystalline region of said luminescent device with one shallow level dopant impurity zinc of opposite conductivity type in a concentration approximately 10 times said concentration of oxygen for controlling radiative transitions of said recombination energy;

doping said crystalline region of said luminescent device with another shallow level dopant impurity of said one conductivity type for compensating said one dopant impurity zinc of said opposite conductivity type, said another shallow level dopant impurity being selected from the group consisting of sulphur, selenium, tellurium and silicon;

doping said crystalline region of said luminescent device with another shallow level dopant impurity cadmium of said opposite conductivity type in a concentration approximately equal to said concentration of oxygen for controlling nonradiative transitions of said recombination energy;

heating said crystalline region to disassociate both zinc-oxygen pairs of atoms and cadmium-oxygen pairs of atoms in said crystalline region; and

annealing said crystalline region to enhance the concentration of associated zinc-oxygen pairs of atoms therein relative to the concentration of associated cadmium-oxygen pairs of atoms therein;

whereby said output recombination from said luminescent device has said one predominant peak due to said associated zinc-oxygen pairs of atoms therein and has efficiency due to isolated cadmium atoms therein.

3,868,282
DOUBLE-BASE PROPELLANT CONTAINING A UREIDE AND A RESORCYLATE

Joseph W. Lavitt, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 7, 1967, Ser. No. 645,565
Int. Cl. C06b *5/04*
U.S. Cl. 149—98 **18 Claims**

1. In a smokeless double-base propellant containing nitrocellulose and nitroglycerin, the improvement consisting of the incorporation in said propellant of the sodium salt of a ureide and a lead resorcylate to produce the synergistic effects of cleaner exhaust, a burning rate of over about 0.25 inches per second, and an operating pressure of over about 1000 pounds per square inch.

3,868,283
METHOD OF MAKING COMPOSITE THREE DIMENSIONAL PICTURE

Stuart R. Scheyer, Glencoe, Ill., assignor to Condecor Incorporated, Mundelein, Ill.

Filed Nov. 17, 1972, Ser. No. 307,476
Int. Cl. B44c *3/02*; **G09f** *1/12*
U.S. Cl. 156—58 **3 Claims**

1. A method for making a composite pictorial representation having a three dimensional effect, comprising the steps of: providing multiple copies of a picture for which the three dimensional effect is to be achieved;

attaching a first one of said pictures to a backing material; cutting away everything but the middle ground portions of a second one of said pictures and attaching said middle ground portion to said first one of said pictures in spaced relation to thereby emphasize said middle ground portion of said second one of said pictures;

cutting away everything but certain foreground portions from a third one of said pictures and attaching it in spaced relation overlying said attached second middle ground portion to thereby emphasize said foreground portion of said third picture;

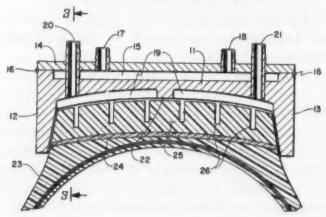
individually bending selected ones of said middle and foreground portions of said picture to slopingly converge horizontally and vertically upon sub-adjacent portions to simulate natural continuity of the subject matter of the picture to produce a composite pictorial representation having the background, middle ground and foreground of said picture appearing in successively forwardly spaced layers and provide a visual three dimensional effect of the subject matter in said picture.

3,868,284

TIRE RETREADING APPARATUS AND METHOD

Bernard E. Hogan, Sr., and John P. Hogan, both of 358 Carol Ct., Mankato, Minn. 56001

Filed Oct. 9, 1973, Ser. No. 404,192
Int. Cl. B29h *5/04, 5/16*
U.S. Cl. 156—96 **8 Claims**



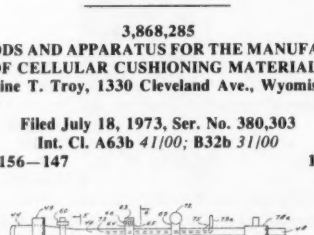
1. Apparatus for bonding a precured tread to a tire carcass without application of heat to the tire carcass sidewalls comprising a cylindrical band assembly having a substantially smooth interior surface, spaced parallel flange members in heat conducting relationship with and extending inwardly from and around said interior surface to define a precured tread aligning and engaging cavity adapted to be occupied by a precured tread, said inner surface having a plurality of spaced transverse slots positioned therein, port means in fluid communication with said slots for injection of fluid into said cavity for applying fluid pressure to the tread surface of said precured tread, and means for heating said band assembly so that heat and pressure are applied from said assembly through said precured tread to bond said tread to an underlying tire carcass.

3,868,285

METHODS AND APPARATUS FOR THE MANUFACTURE OF CELLULAR CUSHIONING MATERIALS

Constantine T. Troy, 1330 Cleveland Ave., Wyomissing, Pa. 19610

Filed July 18, 1973, Ser. No. 380,303
Int. Cl. A63b *41/00;* **B32b** *31/00*
U.S. Cl. 156—147 **14 Claims**



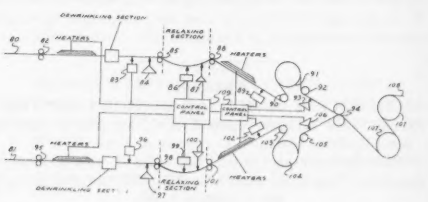
1. A method for the manufacture of a closed-cell cushioning material from a prefab, said prefab comprising longitudinally-extending flat sheets of thermoplastic films with said sheets in superposed relationship to one another and defining exposed outer faces, said prefab having longitudinal marginal seals and transversely-extending spaced cross seals terminating relatively adjacent to but spaced from said marginal seals, the method comprising maintaining longitudinal tension on said sheets, longitudinally advancing said sheets while maintaining said marginal seals in predetermined relationship to each other, introducing a gas under pressure into the unsealed spaces between said sheets during said advancement to inflate the same and simultaneously limiting said inflation to a predetermined extent along spaced longitudinal lines of said sheets, and thereafter forming long seals by sealing said sheets together along said spaced longitudinal lines.

3,868,286

PROCESS FOR PREPARING A POLYVINYL BUTYRAL COMPOSITE INTERLAYER FOR LAMINATED SAFETY GLASS

Robert H. Fariss, Amherst, and Andrew D. Skibo, Monson, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1973, Ser. No. 355,120
Int. Cl. B32b *27/42*
U.S. Cl. 156—163 **4 Claims**



1. A process for preparing a composite interlayer for laminated safety glass which comprises:

A. 1. passing a first continuous sheet of plasticized polyvinyl butyral between a first set of nip rolls to impart machine direction sheet tension and drawdown into the sheet;

2. adjusting the temperature of the first sheet to a temperature in the range of from 90° to 180°F. while removing any wrinkles in the sheet;

3. allowing the first sheet to droop in a catenary loop between a second and third set of nip rolls to obtain a shrink level of less than 4 percent;

4. adjusting the temperature of the first sheet to a temperature in the range of from 90° to 180°F.; and simultaneous with steps 1 to 4 above;

B. 1. passing a second continuous sheet of plasticized polyvinyl butyral which is printed on one side with a color gradient, between a second set of nip rolls to impart machine direction sheet tension and drawdown into the sheet; and

2. adjusting the temperature of the second sheet to a temperature in the range of 90° to 180°F. while removing any wrinkles in the sheet;

3. allowing the second sheet to droop in a catenary loop between the nip rolls to obtain a shrink level of less than 4 percent;

4. adjusting the temperature of the second sheet to a temperature in the range of from 90° to 180°F.; and

C. 1. passing the first and second sheets into a combining nip where they are combined wherein the printed surface of the second sheet of polyvinyl butyral is combined to the first sheet so as to provide a composite wherein the bond strength between the first and second sheet is at least 2 lbs./inch;

2. cooling the resulting composite;

wherein the process steps outlined in A and B above are controlled to provide substantially the same line speed, sheet tension and temperature in each of the first and second sheets

of plasticized polyvinyl butyral being fed into the combining nip.

3,868,287

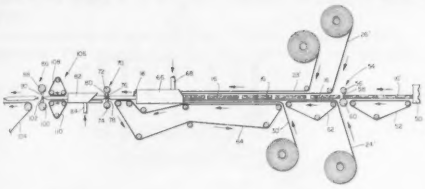
ABSORBENT PAD AND METHOD FOR MAKING SAME

Roman Lewyckyj, Philadelphia, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Division of Ser. No. 137,839, April 27, 1971, abandoned. This application May 30, 1973, Ser. No. 365,205

Int. Cl. B31f *1/00*; **B32b** *31/10, 31/20*

U.S. Cl. 156—201 **6 Claims**



1. A method for continuously manufacturing elongate, disposable absorbent pads comprising the steps of:

a. continuously forming discrete, elongate, absorbent fluff batts of cellulosic fibers;

b. feeding said fluff batts in their direction of elongation in spaced relation to each other, said fluff batts being spaced from each other in said direction of elongation;

c. disposing said fluff batts within a fibrous envelope as said fluff batts are fed in their direction of elongation to form a continuous composite structure comprising said spaced fluff batts disposed within said fibrous envelope;

d. maintaining sufficient tension on said fibrous envelope in the direction of feed to prevent undesirable movement of said continuous composite structure in a direction transverse to said feed direction;

e. transversely closing and sealing said fibrous envelope in regions intermediate adjacent fluff batts by:

1. forming a transversely extending seal band having a seal row of transversely adjacent ridges and valleys interconnected by lateral walls on each of the opposed surfaces of said fibrous envelope, and

2. transversely compressing the lateral walls of said seal row to form weakened seal regions only in said lateral walls, said weakened seal regions, in the plane of said composite structure, being disposed only in the direction of feed of the composite structure, said weakened seal regions being characterized by interlocked fibers of said fibrous envelope for maintaining the seal band in a closed condition; and

f. transversely severing said continuous composite structure within the confines of said transversely extending seal band to form individual elongate absorbent pads having sealed end margins.

3,868,288

PRODUCING AN APPLIQUE THERMOPLASTIC ARTICLE

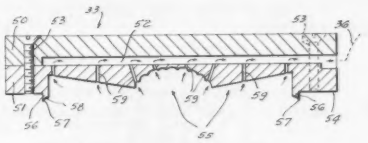
Andrew Ercolano, 30 Haywood St., Bound Brook, N.J. 08805

Filed July 3, 1972, Ser. No. 268,636

Int. Cl. B32b *31/00, 3/00*

U.S. Cl. 156—248 **4 Claims**

1. Method of producing an applique article, comprising the steps of placing a layer of thermoplastic sheet material into a substrate so that a surface of said layer is exposed; heating and softening said layer of thermoplastic sheet material; pressing the softened thermoplastic sheet material at selected portions of said surface against and bonding it to said substrate, one of said selected portions being a circumferentially complete annular bonding zone; subjecting the remaining portions of said surface of the layer of said heated thermoplastic sheet material, while said selected portions are bonded to said substrate, to a suction requisite, for lifting said remaining portions off said substrate; vacuum-forming a three-dimensional pattern in said remaining portions of the softened thermoplastic sheet material concomitantly with the step of lifting said remaining portions by suction; and cutting through at least said layer outwardly adjacent and along said annular bonding zone, at least said pressing step, said suction step, said forming step and said cutting step being carried out simultaneously.



3,868,289

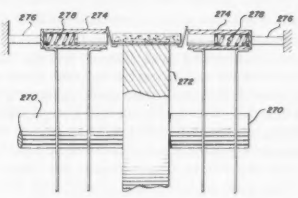
APPARATUS AND METHOD FOR MANUFACTURING JET IMPINGEMENT TYPE FILTERS FOR SMOKING ARTICLES

Hoyt S. Beard; Leslie E. Payne, and Colin S. McArthur, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 171,448, Aug. 13, 1971, Pat. No. 3,779,849. This application June 26, 1973, Ser. No. 373,863

Int. Cl. B31f *1/00*

U.S. Cl. 156—443 **3 Claims**



1. An apparatus for preparing a smoking article having a filter plug which comprises:

a. female die means disposed to receive elongated rods of smoke pervious filter material having ends which are substantially perpendicular to the axis of the rod;

b. means for successively feeding tabs of normally substantially air impervious sheet material having a plurality of smoke-passing perforations therein and successively adhesively securing a minor peripheral portion thereof to the longitudinal surface of elongated rods of smoke pervious filter material adjacent an end thereof with a major portion of the tab extending beyond said end and generally parallel to the axis of said rod;

c. means for successively aligning the elongated rods of smoke pervious filter material with the opening of said female die means;

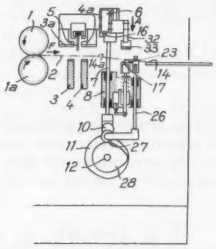
d. folding means for folding said major portion athwart the end of said rod so as to be disposed substantially perpendicular to the axis of said rod with peripheral areas extending radially outwardly from the longitudinal surface; and

e. means for effecting relative reciprocal movement between successive aligned elongated rods and said female die means after said major portion is folded athwart the end of the rod whereby successive elongated rods are inserted into and thereafter retracted from said female die means and thereby serve as male dies and cup the tab over the rod end.

3,868,290
DEVICE FOR STACKING BAGS

Georges Lagain, 14, rue de Seine, 95 Argenteuil, France

Filed July 18, 1973, Ser. No. 380,340
Claims priority, application France, July 28, 1972, 72.27437
Int. Cl. B32b *31/00*; B30b *15/34*
U.S. Cl. 156—510 6 Claims



1. In apparatus for forming stacks of bags from weldable film or tubing, comprising a frame, mobile welding jaw means movably mounted on said frame, further jaw means mounted on said frame in the path of movement of said movable jaw means and cooperating with said mobile jaw means, means for advancing film or tubing along a path extending between said movable jaw means and said further jaw means, means carried by said mobile jaw means for cutting said tubing or film transversely of the direction of movement thereof, drive means connected to said mobile jaw means for moving said mobile jaw means toward and away from said further jaw means, supporting means downstream of said further jaw means for receiving and supporting said film or tubing and holding means connected to and operable by said drive means for movement toward and away from said supporting means for contacting one side of and holding said film or tubing against said supporting means during the welding of said film or tubing by said mobile jaw means, the combination therewith of at least one pair of pinching finger means, one finger means at one side of the path of movement of said film or tubing and the other finger means at the other side of said last-mentioned path and both said finger means extending in the direction transverse to the direction of advance of said film or tubing by an amount less than the dimension of said film or tubing in said transverse direction and normally being intermediate said path and said supporting means for contacting said film or tubing at the side thereof opposite from the side thereof engageable by said holding means prior to contact of said holding means with said film or tubing, one of said supporting means and said pair of finger means being movable toward and away from the other thereof to permit relative movement between said film or tubing and said finger means when said holding means contacts said film or tubing thereby to cause the latter and said pair of finger means to move relative to each other and to cause said pair of finger means to transfer its contact with said film or tubing to the side of said film or tubing contacted by said holding means.

3,868,291
WELDING TOOL FOR FORMING SYNTHETIC-RESIN PACKAGES

Gottlieb Benz, and August Matzinger, both of c/o Maschinenfabrik Flums AG, 8890 Flums, Switzerland

Filed Feb. 16, 1973, Ser. No. 333,306
Int. Cl. B32b *31/18*, *31/20*
U.S. Cl. 156—515 9 Claims

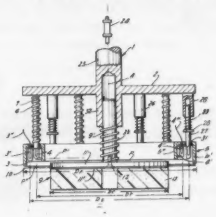
1. An apparatus for welding together a pair of thermoplastic sheets, comprising:

a support displaceable toward and away from said sheets;

an annular welding element on said support engageable with said sheets;

an annular cutting element on said support adjacent said welding element;

a flat flexible and annular polytetrafluoroethylene foil having an inner periphery and an outer periphery and lying between said elements and said sheets, said elements and said foil being generally concentric;



means for releasably securing one of said peripheries to said support while leaving the other periphery free for deflection of said annular foil toward and away from said sheets;

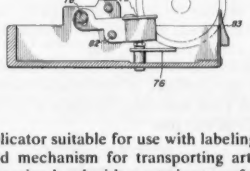
means for heating said welding element to fuse said sheets together with said welding element pressing on said sheets through said foil; and

means for heating said cutting element to a temperature above that of said welding element for severing of said sheets.

3,868,292
LABELING APPARATUS AND UN-METERED GLUING MECHANISM THEREFOR

Richard J. Ernst, Palatine, and Trygve R. Rod, Mundelein, both of Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,563
Int. Cl. B65c *9/00*; B05c *1/00*
U.S. Cl. 156—568 6 Claims



1. A glue applicator suitable for use with labeling apparatus including a feed mechanism for transporting articles to be labeled, an addressing head with a rotating transfer wheel for carrying an individual label from a source of printed labels to the glue applicator and subsequently to an area where the label is transferred to the article to be addressed, the glue applicator comprising:

a glue container for holding a quantity of glue material;

a glue applying member rotatably supported by said container, said glue member comprising:

a base portion having at least one radially extending member having side walls and a peripheral portion partially immersed in glue in said container,

a scraper member having at least one slot delineated by a pair of side walls and a bottom wall through which said at least one radially extending member passes whereby the side walls delineating said slot remove excess glue from the side walls, said peripheral portion being spaced from said bottom wall;

means for rotating the glue applying member; and

a pre-scraper coupled to the glue container and biased against the peripheral portion for continuously removing hardened glue therefrom when the glue applying member is rotated, whereby the relative velocity between wet glue on the peripheral portion on the glue applying member and the periphery of the transfer wheel is not affected by hardened glue.

3,868,293

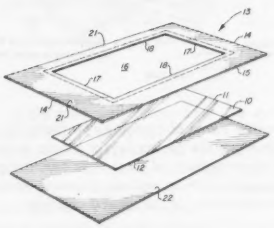
REUSABLE GLARE ELIMINATOR PATCH

Kristin Mills Selph, P.O. Box 227, Ranchos De Taos, N. Mex. 87557

Continuation-in-part of Ser. No. 236,065, April 27, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,536

Int. Cl. B60j *3/06;* **B32b** *3/10, 3/16*

U.S. Cl. 161—1 **3 Claims**



1. In a reusable glare eliminator patch,

a. a thin cast rectangular panel of polarized cellulose acetate of a thickness ranging from .005 inch to .015 inch, and having marginal portions defined by end and side edges;

b. a rectangular plastic frame of cellulose acetate having one face coated with a pressure-sensitive adhesive material and similar in shape to said panel, said frame being formed with a central rectangular cutout similar in shape to said panel but of a size smaller than that of said panel;

c. said frame having end and side edges longer than the corresponding edges of said panel, the face of said frame with the pressure-sensitive adhesive material being adhered to said panel such that said panel fully covers said cutout, the end and side portions of said frame extending beyond the corresponding edges of said panel, and

d. a flexible carrier sheet, having sufficient rigidity to prevent wrinkling of said panel when the latter is carried thereby through the medium of said frame, of the same size and shape as said frame presenting end and side edges and a continuous uninterrupted body between said carrier sheet edges, said carrier sheet being applied to said frame with its edges accurately conforming to the edges of said frame, with the extended portions of said frame adhesively but releasably secured to said carrier sheet.

3,868,294

REFLECTIVE MARKERS

Robert Gayle, Wilton, Conn., assignor to National Patent Development Corporation, New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,129

Int. Cl. B44f *1/02*

U.S. Cl. 161—4 **9 Claims**

1. A substrate having adhered thereto a plurality of thin, short, individual fibers, said fibers each having an inner end which is adhered to said substrate and having an opposite and exposed outer end, said fibers each comprising a central, clear transparent portion which extends longitudinally from said inner end to the outer end of the fiber, and an external, longitudinally extending from said inner end to said outer end, mirror coating on said transparent portion forming a reflective surface to the inner side thereof, whereby when light is impinged on said fibers it is reflected back toward its source.

3,868,295

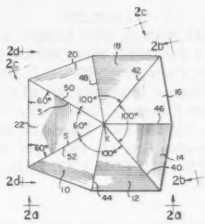
GEOMETRIC BUILDING MODULE

Garret J. Boone, Jr., 820 Hidden Valley Ln., Richmond, Ind. 47374

Filed Apr. 1, 1974, Ser. No. 457,106

Int. Cl. E04b *7/02*

U.S. Cl. 161—15 **4 Claims**



1. A geometric building module comprising seven equal sized equilateral triangles joined together so that one corner point of each triangle meets at a common center point with corner points of the other six triangles, each triangle having two sides extending outwardly from said center point and a base connecting and distal ends of its two sides, each side of each triangle coinciding with the adjacent side of the adjacent triangle, one of said triangles defining a common plane including said common center point, each of said other triangles having one of its sides lying in said common plane and the other of its sides inclining away from one side of said common plane.

3,868,296

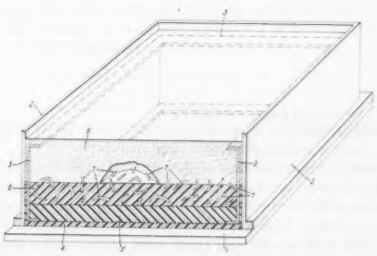
PLASTIC WALL CONSTRUCTION AS A WALL UNIT

Thomas F. McKeon, Jr., King of Prussia, and George D. Meier, Phoenixville, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Apr. 27, 1973, Ser. No. 355,195

Int. Cl. B32g *13/02;* **E04f** *13/04;* **E04c** *1/04;* **E04b** *2/04*

U.S. Cl. 161—43 **2 Claims**



1. A structural unit of general nature of a wall panel comprising:

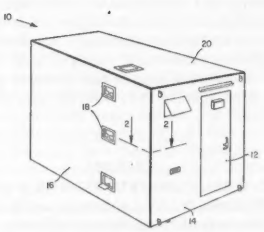
a. a first exposed layer of water-resistant organic resin;
b. a second layer of glass-fiber reinforced organic resin having one face adhered to said exposed first layer of water-resistant organic resin;
c. a third layer of organic resin having one face adhered to said layer of glass-fiber reinforced organic resin, and containing inclusions of wood chips protruding from a face remote from said adhered face to provide an irregular surface configuration;
d. a fourth layer of plaster having one face adjacent to said third layer of organic resin intimately surrounding said protruding wood chips, and having a mechanical bond between said fourth layer of plaster and said protruding wood chips.

3,868,297

A STRUCTURAL PANEL INCLUDING A HONEYCOMB CORE AND A FOAMED POLYMER COMPOSITION

John W. Jamison, Costa Mesa; Robert R. Black, Jr., Lehabre, and Roy E. Denner, Placentia, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 235,893, March 20, 1972, abandoned. This application Feb. 16, 1973, Ser. No. 333,109
Int. Cl. B32b *3/12*; **E04c** *2/32*; **B32b** *5/18, 27/40*
U.S. Cl. 161—68 **5 Claims**



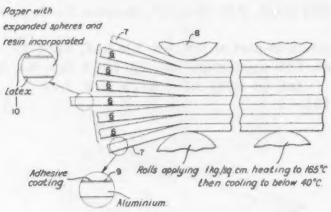
1. A structural panel consisting of:
a first, continuous outer skin;
a second, continuous divider skin;
a third, continuous inner skin;
a rigid foamed synthetic polymer composition material core adhesively secured between said first and second skins;
an uncrushed hexagonal honeycomb core positioned between said second and third skins and attached thereto with its cells substantially normal to one of said second and third skins, so that said foamed core provides low thermal conductivity between said first and third skins of said panel and said honeycomb core provides mechanical strength to said panel.

3,868,298

COMPOUND PANEL

Jean Schrade, Zurich, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed May 18, 1972, Ser. No. 254,675
Claims priority, application Switzerland, May 19, 1971, 7368/71
Int. Cl. B32b *5/16*
U.S. Cl. 161—161 **5 Claims**



1. A laminated panel comprising two facing layers each of metal and between the facing layers a core layer, said core layer consisting essentially of more than one inorganic fibrous sheet impregnated with an organic resinous binder and containing hollow particles of the closed-cell type.

3,868,299

INSULATING GLASS UNIT CONTAINING ABSORBENT MIXTURE

Gunter Ulisch, Leverkusen-Kueppersteg, and Gerhard Heinze, Schildgen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 65,709, Aug. 20, 1970, abandoned. This application May 16, 1972, Ser. No. 253,757
Claims priority, application Germany, Sept. 4, 1969, 1944912
Int. Cl. B32b *5/18*
U.S. Cl. 161—162 **3 Claims**

1. In an insulating glass unit comprising two layers of glass, means spacing said layers from one another and forming an enclosed space therebetween, and vapor-adsorbing granules disposed in and filling only a portion of said space, the improvement which comprises employing as said granules so as simultaneously to adsorb vapors of water and solvent homogeneous granules comprising, by weight, at least about 60% of at least one narrow-pored zeolite having a pore width of up to 5 Angstroms, at least about 10% by weight of at least one wide-pored adsorbent having a pore width in excess of 5 Angstroms, and about 15 to 20% of at least one binder selected from the group consisting of kaolin, attapulgite, bentonite, waterglass and silica.

3,868,300

METHOD OF MAKING A COMPOSITE PANEL LAMINATE HAVING DEEP INDENTATIONS

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.

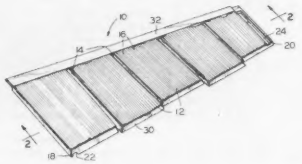
Filed Nov. 15, 1972, Ser. No. 306,692
Int. Cl. D21f *13/00*
U.S. Cl. 162—124 **3 Claims**

1. The method of making a composite panel laminate having a pattern including relatively deep indentations on one side, the minimum thickness of said panel at said indentations being less than one-half the thickness of the unindented areas of said panel, the depth of said indentations being of the order of one-half inch or more, the method comprising,
a. preparing a suction box having a matrix side of foraminous material with an outer surface defining a pattern of

conforming at least with the major raised and indented areas of the pattern of said one side of said panel,

b. immersing said suction box in a tank of cellulosic fibrous pulp slurry and building up by suction through said matrix surface a first web of cellulosic pulp fibers having generally the same contour and configuration as said one side of said panel,

c. transferring said first web while still moist to a metal mold platen having a matrix surface complementary in conformation to said one side of said panel and with the contour



of said preformed web fitting over the contour of the mold platen matrix surface,

d. building up a core layer of loose relatively coarse fibrous wood waste material over said first web positioned on said mold platen to a depth several times greater than the maximum thickness of said panel,

e. placing a second moist pulp web over the top of said core layer,

f. curing the sandwich thus formed by heat and pressure in a hot press to form the finished panel laminate.

3,868,301

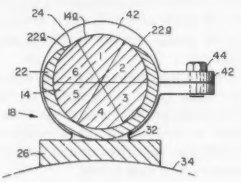
CYLINDRICAL SLEEVE SUPPORT STRUCTURE FOR ADJUSTMENT OF WEB CONTACTING SURFACE OF PICK-UP BAR IN A PAPERMAKING MACHINE

Joseph V. Cloutier, 110 Park St., Berlin, N.H. 03570

Filed Oct. 25, 1973, Ser. No. 409,685

Int. Cl. D21f *2/00*

U.S. Cl. 162—358 **7 Claims**



1. An improved pick-up bar for use in a paper making machine comprising a cylindrical shaft, a cylindrical sleeve snugly engaging around the shaft along its entire length, said sleeve being slit along its length to expose a length-wise segment of the shaft surface, means for supporting the sleeve along its entire length so that the shaft is disposed horizontally and means for preventing rotational and axial movements of the shaft relative to the sleeve.

3,868,302

THERMAL SHIELD OF A NUCLEAR REACTOR

Norman R. Singleton, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 12, 1971, Ser. No. 142,581

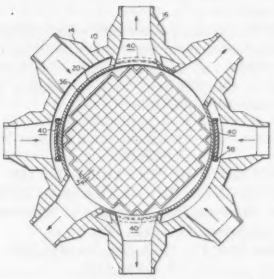
Int. Cl. G21c *11/08*

U.S. Cl. 176—87 **7 Claims**

1. A nuclear reactor including, in combination:

an elongated upstanding pressure vessel;

an elongated upstanding nuclear core within said pressure vessel comprising a plurality of fuel assemblies, said fuel assemblies being situated in side-by-side relationship such that the core has a generally rectangular configuration in plan view with some portions of the core closer to the



inner side wall of the pressure vessel than other portions; supportive and shielding structures being interposed between the nuclear core and the pressure vessel and coextending at least in part with the longitudinal dimension of said elongated core, the coextending parts of said interposed structures having an increased thickness adjacent said some portions.

3,868,303

METHOD OF PRODUCING ENZYME AND ITS UTILIZATION THEREOF

Nobuzo Tsumura, Tokyo; Shoji Yanai, Funabashi, and Masako Ishikawa, Yokohama, all of Japan, assignors to Director of National Food Research Institute, Tokyo, Japan

Filed Nov. 6, 1972, Ser. No. 304,205

Int. Cl. C12d *13/10*

U.S. Cl. 195—2 **18 Claims**

1. A method for producing lytic enzyme to dissolve living and dead cells of various kinds of microorganisms and also their constituents which comprises; cultivating a new strain *Achromobacter lunatus* to produce the enzyme in the cultured broth and/or in the living cells and harvesting the enzyme.

17. Process of dissolving cells and constituents thereof which comprises: introducing the enzyme produced from the cultivation of *Achromobacter lunatus* into a suspension containing cells of microorganisms to be dissolved, and continuing the reaction in said suspension for a time sufficient to produce an adequate lysis of cells.

3,868,304

METHOD OF MAKING FRUCTOSE WITH IMMOBILIZED GLUCOSE ISOMERASE

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 16, 1973, Ser. No. 332,739

Int. Cl. C12d *13/00*

U.S. Cl. 195—31 F **17 Claims**

1. A method of making fructose which comprises incubating a glucose solution with an immobilized enzyme composite comprising glucose isomerase adsorbed on the inner surfaces and within the pores of a porous alumina body having an average pore diameter between about 140A and 220A.

3,868,305
PROCESS FOR PRODUCING ETHANOL-ASSIMILATING YEAST

Yoshiro Masuda; Kenji Kato; Yoshihiro Takayama; Kenji Kida, and Meiseki Nakanishi, all of Ami-machi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1973, Ser. No. 410,979
Claims priority, application Japan, Nov. 17, 1972, 47-115270
Int. Cl. C12c *11/00*
U.S. Cl. 195—49 **9 Claims**

1. A process for culturing yeast cells which comprises cultivating a strain selected from the group consisting of *Candida ethanothermophilum* and *Candida acidothermophilum* belonging to the genus Candida in a culture medium containing ethanol under aerobic conditions.

3,868,306
METHOD FOR PREPARING 3(S OR R)-HYDROXY-1-IODO-1-TRANS-OCTENE

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 12, 1973, Ser. No. 411,773
Int. Cl. C12d *1/00*
U.S. Cl. 195—51 R **4 Claims**

1. A process for producing 3(S or R)-hydroxy-1-iodo-1-trans-octene which comprises subjecting 3-oxo-1-iodo-1-trans-octene to the fermentative enzymatic action of a microorganism selected from the classes Ascomycetes, Phycomycetes and Fungi Imperfecti.

3,868,307
PRODUCTION OF DISTILLERS YEAST

James M. Van Lanen, deceased, late of Peoria, Ill.; Merritt B. Smith, and Weldon F. Maisch, both of Peoria, Ill., assignors to Hiram Walker & Sons, Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 189,678, Oct. 15, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,359
Int. Cl. C12c *11/00*
U.S. Cl. 195—82 **6 Claims**

1. A method of propagating distillers yeast comprising the steps of:

preparing a cooked mash of ground cereal grain in water with the cereal grain comprising at least 95% by weight of a member selected from the group consisting of corn, milo, and mixtures thereof;

adding to the mash glucamylase ferment produced by the submerged, aerobic fermentation of a cereal grain mash with a glucamylase producing mold strain selected from the group consisting of *A. niger; A. foetidus; A. awamori*; and *A. oryzae* with about 1,000–20,000 units of glucamylase ferment per bushel of grain being used to treat the cereal grain mash;

incubating the resulting mixture of mash and glucamylase ferment at a temperature of about 120°–140°F. for about 4–6 hours;

sterilizing the mash;

cooling the resulting sterilized mash to about 80°F.;

inoculating the resulting cooled sterilized mash with distillers yeast;

incubating the inoculated mash until the Balling of the mash has dropped about 4°–5°;

cooling the resulting yeast culture to a temperature of no more than about 60°F;

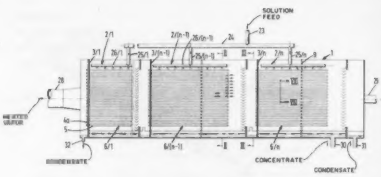
maintaining the yeast culture in the mash in which it was propagated at a temperature of no more than about 60°F.; and

storing the yeast at said temperature of no more than about 60°F. in the mash in which it was propagated for at least about 72 hours and during storage withdrawing portions of yeast periodically to inoculate distillery grain mashes for alcohol production.

3,868,308
MULTIEFFECT EVAPORATOR

Amitzur Ze'ev Barak, Tel-Aviv; Joseph Michael Weinberg, Nethanya, and Moshe Pachter, Tel-Aviv, all of Israel, assignors to Israel Desalination Engineering (Zarchin Process) Ltd., Tel-Baruch, Tel-Aviv, Israel

Filed Jan. 25, 1972, Ser. No. 220,650
Claims priority, application Israel, July 5, 1971, 37225
Int. Cl. B01d *1/22*
U.S. Cl. 202—174 **16 Claims**



1. A multiple effect evaporator, comprising:

a housing;

a plurality of substantially vertical parallel tube sheets connected to the interior of said housing;

a plurality of effects in said housing each effect defined between a pair of said tube sheets the effects being substantially aligned;

a plurality of substantially aligned bundles of substantially horizontally extending condenser tubes, one of said bundles being located in each of said effects, the constituent tubes of each said bundle being supported adjacent one set of open ends thereof by one of said tube sheets through which said ends extend;

a plurality of openwork grids connected to the interior of said housing through each of which the tubes of one of said bundles extend;

sealing means for sealing said sets of open ends to said tube sheets;

non-condensible gas discharge vents with restricted diameter compared with the inner diameter of said tubes, connected to the ends of said tubes opposite the tube sheet ends;

solution introducing means for introducing solution into the upper portions of each effect in such a manner that it flows downwardly under gravity in film form over and around said tubes;

heated vapor introducing means for introducing heated vapors into the open ends of the tubes of the first and hottest effect to undergo heat exchange with the downflowing solution in said effect, as a result of which a portion of the solution vaporizes and at least a portion of the vapors condenses in said tubes;

vapor passing means for passing the vapors from one effect into the tubes of a subsequent effect, in such a manner that vapor flow in each effect is in a direction substantially parallel to the tubes in that effect and the passage of vapors throughout all the effects involving substantially no changes in flow direction; and

collecting means for respectively collecting and removing condensate and concentrate products.

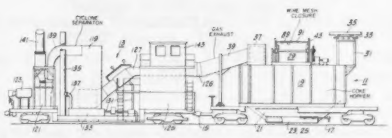
3,868,309
HOT COKE TRANSFER SYSTEM

John D. Sustarsic, McKees Rocks; Raymond C. Kinzler, Carnegie, and William D. Edgar, Allison Park, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 31, 1972, Ser. No. 285,427
Int. Cl. C10b *35/00, 27/04*
U.S. Cl. 202—262 **14 Claims**

1. A system for receiving and transferring hot coke pushed from a coke oven comprising:

a. a first vehicle that is movable along one side of said coke oven and that has a hopper thereon for receiving and holding said hot coke when pushed from a chamber of said coke oven, said hopper being lined with refractory material;
b. a hood on said hopper having an opening through which said hot coke passes;



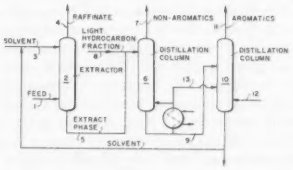
c. a wire mesh screen that is movable into one position to close said opening in said hopper and that is movable into another position to open said hood;
d. means for conducting gases arising from said coke away from said hopper; and
e. a second vehicle couples to said first vehicle and supporting means for scrubbing and cleaning said gases.

3,868,310

SELECTIVE SOLVENT EXTRACTION PROCESS

Alfred L. Van Kleef; Derk Roffel, and Frits W. Van Vollenhoven, all of The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,192
Claims priority, application Netherlands, Sept. 26, 1969, 6914611
Int. Cl. B01d *3/34*
U.S. Cl. 203—58 **6 Claims**



1. A process for separating aromatic hydrocarbons from a mixture of aromatic and non-aromatic hydrocarbons boiling in the C_5 to C_{15} range which comprises (1) splitting said mixture by distillation into a higher boiling, C_9 to C_{15} hydrocarbon fraction and a lower boiling C_5 to C_8 hydrocarbon fraction, (2) subjecting said higher boiling fraction to a liquid-liquid extraction with a solvent selective for aromatics to obtain an extract phase enriched in aromatic hydrocarbons and an raffinate phase enriched in non-aromatic hydrocarbons, (3) subjecting said extract phase to distillation in a first distillation zone into which said lower boiling hydrocarbon fraction and additional amounts of said selective solvent are simultaneously introduced, (4) withdrawing a stream further enriched in aromatic hydrocarbons from said first distillation zone and passing said stream into a second distillation zone wherein said selective solvent is separated from said aromatic hydrocarbons, and a high purity aromatic hydrocarbon stream is recovered therefrom.

3,868,311

METHODS FOR THE FORMATION ON A WALL EXPOSED TO FRICTIONAL FORCES AND BELONGING TO A LIGHT ALLOY ELEMENT, OF A WEAR-RESISTANT COMPOSITE COATING METALLIC

Michel Durin, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Nov. 8, 1972, Ser. No. 304,842
Claims priority, application France, Nov. 9, 1971, 71.40153
Int. Cl. C23b *5/50, 5/62*
U.S. Cl. 204—33 **22 Claims**

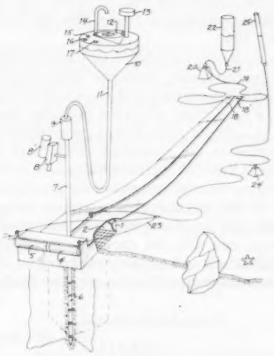
1. Method for the formation of a metallic wear-resistant coating, comprising primarily nickel containing a dispersed phase of hard fine particles, on a wall to be exposed in service to frictional forces, said wall comprising a light metallic alloy, said method including: forming by chemical means a thin layer of zinc on said wall, then depositing electrolytically a composite layer of nickel containing hard particles in a dispersed phase; said method being characterized in initially subjecting the bare wall to a shot-blasting treatment.

3,868,312

DEEP SEA MINING SYSTEM

Frederick Wheelock Wanzenberg, and Fritz Walter Wanzenberg, both of 9 Campbell Ln., Larchmont, N.Y. 10538

Division of Ser. No. 700,470, Jan. 25, 1968, Pat. No. 3,748,248, which is a continuation-in-part of Ser. No. 526,970, Feb. 10, 1966, abandoned. This application Oct. 12, 1970, Ser. No. 80,015
Int. Cl. C22d *1/12, 1/02*
U.S. Cl. 204—109 **17 Claims**

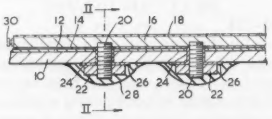


1. A method for recovering metals and metal compounds from material which has been collected from mineral deposit areas formed under water which comprises separating from the collected material desirable mineral bearing ore materials so as to segregate said mineral bearing ore materials from sand, shells and other undesired waste material, discarding the undesired waste material, treating the separated mineral bearing ore material in a processing area including oxidizing insoluble metal compounds in said material to convert the same to soluble metal ions and radicals, separating the resultant products from the gangue and collecting and removing by electrolysis the resultant products to obtain the desired metals and/or metal compounds.

3,868,313
CATHODIC PROTECTION

Philip James Gay, 91 Newland Park, Hull, Yorkshire, England

Filed Feb. 21, 1973, Ser. No. 334,317
Claims priority, application Great Britain, Feb. 25, 1972, 8771/72
Int. Cl. C23f 13/00
U.S. Cl. 204—196 10 Claims



1. A cathodic protection system comprising a metal to be protected, an electrically non-conductive coating applied in fluid form over the metal, an electrically conductive coating applied in fluid form over the non-conductive coating, said conductive coating being rendered electrically conductive by the incorporation of elemental carbon therein, such that the metal and electrically conductive coating are electrically insulated one from the other, a source of D.C. voltage being connected between the metal and the electrically conductive coating such that the electrically conductive coating is anodic with respect to the metal.

3,868,314
ION EXCHANGE MEMBRANES

Yukio Mizutani, Tokuyama; Koshi Kusumoto, Shinnanyo, and Yosinori Mizumoto, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan

Division of Ser. No. 307,852, Nov. 20, 1972, Pat. No. 3,821,127. This application Feb. 15, 1974, Ser. No. 442,843
Claims priority, application Japan, Nov. 26, 1971, 46-94513
U.S. Cl. 204—296 3 Claims

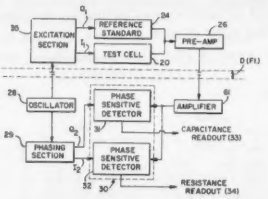
1. An ion exchange membrane containing both cation exchange groups and anion exchange groups, said cation exchange groups being sulfonic acid groups which are present on the surface, or its vicinity, of the ion exchange membrane, the density of the sulfonic acid groups progressively decreasing from the surface of the membrane towards its interior, the amount of the sulfonic acid groups being 0.05 to 20 equivalent percent based on the total amount of the ion exchange groups, the amount of said anion exchange groups being 80 to 99.5 equivalent percent based on the total amount of the ion exchange groups, and said ion exchange membrane having a ratio of direct membrane current resistance to alternate current membrane resistance of not more than the limiting resistance ratio.

3,868,315
ELECTRONIC MEASUREMENT OF END POINT OF ASPHALT OXIDATION

Eric O. Forster, Scotch Plains; Alan D. Goldshine, West Orange, and Albert Gathman, Belmar, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 271,036, July 12, 1972, Pat. No. 3,779,892, which is a continuation of Ser. No. 9,486, Feb. 9, 1970, abandoned. This application July 26, 1973, Ser. No. 382,677
Int. Cl. C10g 1/00
U.S. Cl. 208—6 7 Claims

1. A method for determining the end point of an air blowing process employed in the manufacture of asphalt, comprising the steps of (1) electrically simulating at a preselected first frequency at least the desired viscosity of the final asphalt, (2) continuously electrically measuring the electrical property characteristic of the viscosity of the asphalt undergoing manufacture at said first frequency by contacting said asphalt undergoing manufacture with electrical sensor means, (3) comparing electrically the electrically simulated viscosity with the actual measured electrical property characteristic of said viscosity resulting from step (2), and (4) determining the

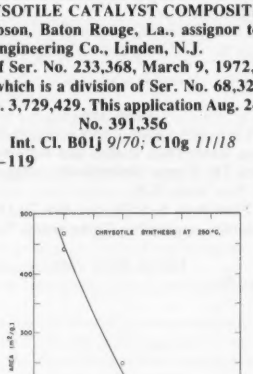


difference between the electrically simulated and the actual measured electrical property characteristic of said viscosity, thereby to provide an indication as to when the end point of said air blowing process has been obtained.

3,868,316
PROCESS FOR CRACKING HYDROCARBONS WITH CHRYSOTILE CATALYST COMPOSITIONS

Harry E. Robson, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Linden, N.J.

Division of Ser. No. 233,368, March 9, 1972, Pat. No. 3,804,741, which is a division of Ser. No. 68,324, Aug. 31, 1970, Pat. No. 3,729,429. This application Aug. 24, 1973, Ser. No. 391,356
Int. Cl. B01j 9/70; C10g 11/18
U.S. Cl. 208—119 29 Claims



1. A process for the cracking of hydrocarbon feeds which comprises contacting said feed at hydrocarbon cracking conditions with a catalyst comprising a layered complex metal silicate composition characterized as having repeating units defined by the following structural formula:

$$[(1-x)M^{(a)}+xM^{(b)}]_n\,(OH)_4Si_2O_5\cdot wH_2O$$

where M and M are selected from monovalent and multivalent metal cations selected from Groups I, II, III, IVB, VB, VIB, VIIB and VIII metals, of the Periodic Table of the Elements, having an effective ionic radius ranging from about 0.5 to about 1 A, x is a number ranging from 0 to 1 which expresses the atomic fraction of the metals M and M, a is the valence of M, b is the valence of M, n is a number equal in value to that defined by the ratio $6/[a(1-x)+bx]$, w is a number ranging from 0 to 4, and

where $x = 0$, and M is magnesium, the surface area of the composition ranges above about 110 m^2/g,

where $x = 0$, and M is nickel, the surface area of the composition ranges above about 125 m^2/g, and

where $x = 0$, where M is cobalt, the surface area of the composition ranges above about 190 m^2/g.

3,868,317

PROCESS FOR CONVERSION OF HYDROCARBONS

Takuji Itoh; Ikuo Akitsuki; Tadashi Miura, all of Ohi-Machi, and Kohei Kubota, Kasukabe, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha

Filed Jan. 31, 1973, Ser. No. 328,847
Claims priority, application Japan, Feb. 5, 1972, 47-13024
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 **3 Claims**

1. A process for the catalytic reforming of a naphtha fraction, which comprises contacting said naphtha fraction in the presence of hydrogen at a temperature of about 300° to 600°C. under a pressure of about 1 to 70 Kg/cm^2 with a catalyst composition comprising a refractory oxide as a carrier, and about 0.01 to 6 percent by weight of a metal of the platinum group, about 0.01 to 6 percent by weight of cadmium, about 0.01 to 6 percent by weight of tin and about 0.1 to 5 percent by weight of a halogen, based on the catalyst.

3,868,318

SEPARATION OF FINE SOLIDS WITH ADSORBING BODIES

Norman Owen Clark, Par, Cornwall, and William Windle, Anstell, Cornwall, both of England, assignors to English Clays Lovering Pochin & Company Limited, Cornwall, England

Continuation of Ser. No. 133,387, April 12, 1971, abandoned. This application Oct. 30, 1973, Ser. No. 411,152
Claims priority, application Great Britain, Apr. 15, 1970, 18067/70; Jan. 8, 1971, 1112/71
Int. Cl. B03b *1/04*
U.S. Cl. 209—9 **16 Claims**

1. A method of separating fine particles having a gravitational settling velocity in a fully deflocculated aqueous suspension of not more than 1 millimetre/hour at 20°C, of one mineral from coarser particles of the same mineral, which method comprises (i) forming a deflocculated aqueous suspension of the particles, the aqueous suspension including a cationic surface active agent; (ii) causing the particles in said deflocculated aqueous suspension to come into contact with solid bodies having a mean diameter which is at least 10 microns and not more than 1 cm., the bodies being (a) chemically different from said one mineral, (b) capable of adsorbing said cationic surface active agent to produce a positively charged surface coating thereon, and (c) selected from the group consisting of coarse, granular particles; short cellulosic fibres having a length of from 1 to 2 mm; and short asbestos fibres having a length of from 1 to 2 mm, whereby said fine particles are preferentially adsorbed on the positively charged surfaces of the solid bodies; (iii) separating the solid bodies holding the adsorbed fine particles from the remainder of the suspension; and (iv) separating said fine particles from said solid bodies by agitating the solid bodies in an alkaline solution.

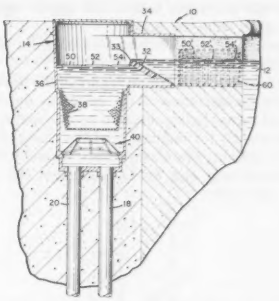
3,868,319

METHOD AND APPARATUS FOR REMOVING OIL FROM SWIMMING POOLS

Gerall A. Black, 7532 Oakland Ave. South, Minneapolis, Minn. 55423, and Edward C. Straub, 9007 W. 70th St., Merriam, Kans. 66204

Filed Oct. 23, 1973, Ser. No. 408,860
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **4 Claims**

3. The method of removing oil from the surface of a body of water in a pool having a recirculating filter system including an entrance passage thereinto, a pump, and a strainer basket between said passage and said pump, said method comprising the step of locating pads preferentially absorptive of oil and floatable upon the surface of water within the entrance passage on the side of the basket waay from the pump, whereby



oil floating on the surface of the water flowing through the passage is absorbed by said pads.

3,868,320

TREATMENT OF PAPER BOX PLANT EFFLUENTS

Shibley A. Hider, Toledo, Ohio; John K. Rogers, Valdosta, Ga., and Colbert W. Wilkins, Toledo, Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Filed July 30, 1973, Ser. No. 383,574
Int. Cl. B01d *21/01*
U.S. Cl. 210—53 **7 Claims**

1. A method of clarifying an aqueous, starch adhesive effluent from a paper box plant which comprises combining therewith an aqueous flexographic ink effluent containing about 40–50 percent by weight maleic or acrylic vehicle, and 15–40 percent by weight pigment to form a mixture containing about 8–12 parts starch solids to 1 part ink solids, flocculating the resulting mixture with a multivalent metal compound selected from the group consisting of calcium oxide, calcium hydroxide, calcium chloride, magnesium oxide, magnesium hydroxide, aluminum sulfate or ferrous sulfate, said compound added in a weight ratio of 0.1–1 parts compound to 1 part ink-starch solids and separating the flocculated solids thus formed.

3,868,321

LIQUID SEPARATORS

Dick Valentine Gough, 1 Knights Bank Rd., Hill Head, Fareham, England

Filed Apr. 16, 1973, Ser. No. 351,275
Claims priority, application Great Britain, Apr. 19, 1972, 18249/72
Int. Cl. B01d *21/26*
U.S. Cl. 210—86 **8 Claims**

1. A device for separating denser and lighter constituents of a mixture of liquids or a solid material and a liquid, comprising, in combination,

i. a container,

ii. a drain outlet in a lower region of the container,

iii. a barrier in an upper region of the container dividing said upper region into an inner space and an outer space surrounding said inner space,

iv. an inlet for the mixture into the container opening into said upper region outer space,

v. an outlet from the chamber being disposed in an upper part of said inner space,

vi. said inlet being directed obliquely to the barrier to impart to the entering mixture a circulatory motion around the barrier whereby centrifugal separation of the mixture is initiated as it flows to the lower limit of the barrier, the arrangement being such that the denser constituent settles in said lower region and the lighter constituent flows to said outlet by way of said inner space,

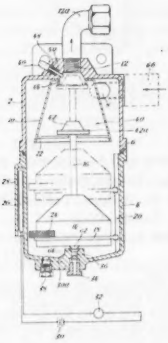
vii. a float in said lower region being displaceable upwardly by buoyancy forces as the denser constituent accumulates there,

viii. an electrical proximity switch disposed on or adjacent a side of the container below said upper region to be laterally offset from the float,

ix. a mounting for said switch maintaining the switch in a space sealed from the container interior,

x. a magnet mounted on a lateral region of the float adjacent said switch for operation of the switch as the float rises,

xi. external means being actuated by the operation of the proximity switch for indication of the rising of the float and/or for opening said drain outlet, whereby the settled denser constituent can be drained from the container through said outlet,



xii. a shut-off valve disposed in the container above the float to be closed by the float when the float has risen above a position at which said external means are to be operated,

xiii. said shut-off valve comprising a valve seating in said inner space in the path of the flow through said space and a valve body upwardly displaceable by said rising of the float to engage with the seating and stop the outflow of the separated lighter constituent from the container after said position is passed,

xiv. an externally operable device being provided for displacement of the shut-off valve body from its seating to permit said outflow to restart when the float descends again after closure of the valve.

3,868,322

APPARATUS FOR PROVIDING A SUPPLY OF A FILTERED FLUID

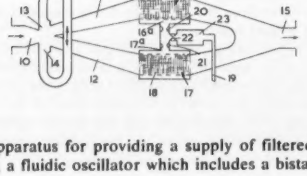
George Orioff, 16 Heaton Rd., Solihull, Warwickshire, England

Filed July 23, 1973, Ser. No. 381,590

Claims priority, application Great Britain, July 21, 1972, 34167/72

Int. Cl. B01d *35/12*

U.S. Cl. 210—108 **4 Claims**



1. An apparatus for providing a supply of filtered liquid, comprising a fluidic oscillator which includes a bistable wall attachment effect device having a pair of outlet passages and a pair of control ports, said control ports being interconnected so as to cause the bistable device to switch periodically between its two stable states at a rate determined by the fluid throughput, a pair of chambers in said outlet passages respectively, a common outlet to which said chambers are connected, each of said chambers having an auxiliary outlet, a pair of filter elements separating said auxiliary outlets from said chambers but permitting unimpeded flow of fluid from the outlet passages to the common outlet, a flow restrictor network interconnecting said auxiliary outlets, and a filtered fluid outlet communicating with said restrictor network, whereby, when the bistable device is in one stable state, a proportion of the fluid flowing into one chamber is tapped off from said auxiliary outlet and flows partially to the other chamber and partially to said filtered fluid outlet, and when the bistable device is in its other stable state a proportion of the fluid flowing through the other chamber is tapped off and flows partially to said one chamber and partially to said filtered fluid outlet, so that both filter elements are cleaned periodically and a continuous supply of filtered fluid is available at the filtered fluid outlet.

3,868,323

APPARATUS FOR REMOVAL OF SETTLED OR STRAINED SOLIDS FROM SURROUNDING LIQUID

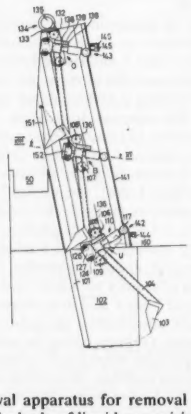
Kamil Fux, Schmerikon, Switzerland, assignor to Prometall Uznach AG, Uznach, Switzerland

Filed Sept. 6, 1973, Ser. No. 394,931

Claims priority, application Switzerland, Sept. 6, 1972, 13102/72; Nov. 28, 1972, 17329/72; Jan. 18, 1973, 725/73; Mar. 9, 1973, 3547/73

Int. Cl. B01d *35/16*

U.S. Cl. 210—154 **15 Claims**



1. A solids removal apparatus for removal of solids from below the surface of a body of liquid comprising, in combination:

a carriage mounted for back-and-forth movement in a linear path above the surface of the liquid from which solids are to be removed and provided with drive means for producing back-and-forth movement thereof;

at lest one primary depending arm pivoted on a shaft supported by said carriage for swinging in the directions of travel of said carriage;

solids moving means carried on the lower extremity of said primary arm or arms;

a secondary arm at a fixed angle to a least one of said primary arms;

positioning means for said secondary arm, including an adjustable spring biased extension carrying a follower and a guide track therefor disposed longitudinally of the path

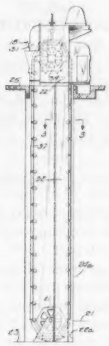
of movement of said carrier, said follower being pressed against said guide track and so arranged that each said primary arm has a forward solids removing movement in a first position of said primary arm when said carriage moves in one direction, and a backward idle movement in a second position of said primary arm when said carriage moves in the other direction, said positioning means operating to power the shift of position of said primary and secondary arms from the motion imparted to said carriage by said drive means.

3,868,324

WATER INTAKE AND FISH RETURN SYSTEM

Robert F. Taylor, Milwaukee; Donald A. Strow, Hales Corners, and Hosein Mansouri, New Berlin, all of Wis., assignors to Envirex Inc., Waukesha, Wis.

Filed Dec. 22, 1972, Ser. No. 317,587
Int. Cl. Fo2b *8/08;* **B01d** *33/02*
U.S. Cl. 210—158 **4 Claims**



1. A water intake structure comprising side walls forming a channel and spaced, rigid columns within the channel, a series of travelling water screen units supported by and between said columns, the forward faces of the screens of each unit being flush with the faces of the intermediate columns, said faces being arranged in a straight line extending at an angle across the channel and respecting the direction of flow approaching the screens, an opening in one channel wall where said line of screens meets said one wall at said angle, said angle being in the order of 30° so that the fish swimming away from the screens may be carried sideward by the flow in the one direction only which is toward said opening through which they may leave the channel, each screen having a rectangular frame, the frames of the screens of each unit being pivotally interconnected in an endless series, each travelling water screen unit further comprising a rotating drive means over which the series operates and from which the frames are suspended in the water intake channel and means for flushing debris from the upward run of the screens emerging from the channel;, the screen of each said unit comprising a series of laterally spaced vertical bars.

3,868,325

FILTER TUBE ADAPTERS

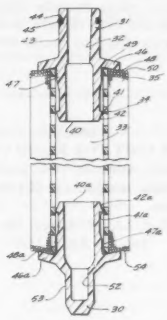
Walter Otto, Wantagh, N.Y., assignor to Sethco Manufacturing Corp., Freeport, N.Y.

Filed Aug. 24, 1973, Ser. No. 391,440
Int. Cl. B01d *27/00*
U.S. Cl. 210—232 **8 Claims**

1. In combination with a filter tube having a hollow cylindrical flexible mesh core supporting fibrous filtering material on its outer surface, a pair of adapters for insertion into the ends of said core, said adapters each including:

a. a frusto-conical end presenting a sharp circular edge facing away from that end of the adapter, the diameter of said edge being slightly larger than the internal diameter of the filter tube core, and

b. an outwardly projecting circular flange having sharp edge means for pressing into the end of the filtering material closest to the end of said core into which said frusto-



conical end is inserted, the diameter of said flange edge means being larger than the external diameter of the filter tube core but smaller than the external diameter of the filtering material on the core,

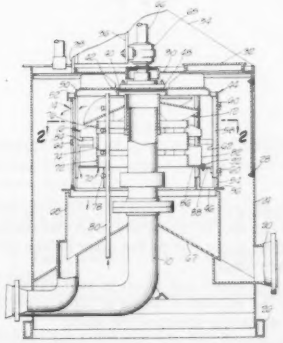
whereby when said adapters are inserted into the ends of the filter tube core said flange edge means are pressed into the ends of the filtering material and said frusto-conical end edge bites into the internal surface of the core to prevent inadvertent movement of the adapters in a direction out of the core.

3,868,326

DISTRIBUTOR FOR CENTRIFUGAL SCREEN SEPARATOR

Walter J. Talley, Jr., Brentwood Park, Calif., assignor to Sweco Inc., Los Angeles, Calif.

Filed Mar. 12, 1973, Ser. No. 340,087
Int. Cl. B01d *33/02*
U.S. Cl. 210—377 **10 Claims**



1. A device for distributing solids-containing liquid to a rotary screen edge in a centrifugal screen separator comprising

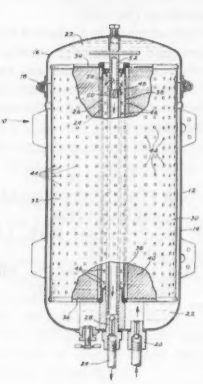
primary distribution means positioned within the rotary screen cage for distributing solids-containing liquid influent to the inner side of the rotary screen cage; and

secondary distribution means positioned within the rotary screen cage below said first distribution means for receiving solids-containing liquid influent rebounded from the rotary screen cage and returning that rebounded influent to the rotary screen cage, said secondary distribution means including a body extending to substantially prevent solids containing liquid influent from passing interior thereof, vertical plates radially disposed and extending from said body and fixed thereto, said secondary distribution means being fixed to rotate with the rotary screen cage.

3,868,327
FILTER UNIT FOR FLUID CLEANER

James F. Van Gilder, Addison, Tex., and Donald R. Schmidt, Worthington, Minn., assignors to Skyway Sales Corporation, Lake Perry, Kans.

Filed Mar. 12, 1973, Ser. No. 339,992
Int. Cl. B01d *25/04*
U.S. Cl. 210—457 **9 Claims**



1. The method of making a filter unit including the steps of:

A. stacking a plurality of identically sized, flat sheets of toilet paper grade filter paper one on the other in face to face relationship to each other;

B. placing impervious end plates of substantially the same shape as the individual sheets of filter paper in sealing relation to the end sheets of the stack;

C. exerting a pressure on the outer surfaces of said plates to achieve a desired, predetermined pressure between adjacent filter paper sheets; and

D. fastening these end plates with respect to each other to maintain the desired pressure between the filter paper sheets.

3,868,328
FRICTION REDUCING COMPOUNDS FOR USE IN HYDRAULIC FRACTURING FLUIDS

Jerry Emile Boothe, Pittsburgh; Fred David Martin, and Andrew Jackson Sharpe, Jr., both of McMurray, all of Pa., assignors to Calgon Corporation, Robinson Township, Pa.

Continuation-in-part of Ser. No. 233,345, March 9, 1972, abandoned. This application Jan. 15, 1973, Ser. No. 323,546
Int. Cl. C09k *3/00*
U.S. Cl. 252—8.55 C **3 Claims**

1. An improved method for hydraulically fracturing an earth formation penetrated by a well comprising injecting an aqueous fracturing fluid down the well into the earth formation under pressure to cause fracturing of the earth formation wherein the improvement comprises treating the aqueous fracturing fluid prior to injection with an effective amount of a random, linear, water-soluble polymer consisting essentially of from about 1.0 to 100 percent by weight (3-acrylamido-3-methyl) butyl trimethyl ammonium chloride and from 0 to about 99 weight percent acrylamide.

3,868,329
GREASE COMPOSITION

Stuart Houston Brown, San Rafael, and Richard E. Crocker, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 348,399, April 5, 1973,. This application May 29, 1973, Ser. No. 364,853
Int. Cl. C10m *5/20, 7/32, 7/30*
U.S. Cl. 252—17 **12 Claims**

1. A grease composition comprising a major portion of an oil of lubricating viscosity, (1) from 0.5 to 20 weight percent of a water and oil-insoluble mono or polyurea thickening agent having at least one ureido group and having a molecular weight between about 350 and 2,500, (2) from 3 to 30 weight percent of an alkaline earth metal aliphatic monocarboxylate having from 1 to 3 carbons, and (3) from 0.1 to 10 weight percent of a Mannich Base prepared by reacting phenol with formaldehyde and an amine selected from the class consisting of diethanolamine, N,N-diethanol alkylenediamine and diethylamine, the molar ratio of formaldehyde to amine to phenol being between about 0.5 and 5:0.5 and 5:1.

3,868,330
LUBRICANTS AND FUEL CONTAINING HIGH MOLECULAR WEIGHT CARBOXYLIC ACID ACYLATING AGENTS AND THEIR DERIVATIVES

Norman A. Meinhardt, Lyndhurst, Ohio, and Charles Wesley Adams, Greenville, S.C., assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 80,500, Oct. 13, 1970, Pat. No. 3,755,169. This application May 16, 1973, Ser. No. 360,991
Int. Cl. C10m *1/24, 1/30*
U.S. Cl. 252—33.6 **20 Claims**

1. A lubricant or fuel composition comprising, respectively, a major amount of a lubricating oil or a normally liquid fuel and 0.0001% to 20% by weight of at least one oil-soluble high molecular weight carboxylic acid acylating agent prepared by a process comprising intimately contacting chlorine with a reaction mixture at a temperature of at least 140°C. and up to the decomposition temperature, said reaction mixture being selected from the group consisting of:

I. A first reactant which is at least one (A) monocarboxylic acid acylating agent containing an average of at least about 50 aliphatic carbon atoms in the acyl moiety exclusive of the carboxyl functions and at least one (B) low molecular weight carboxylic acid reactant which is an ethylenically unsaturated mono- or polycarboxylic acid acylating agent containing a total of up to about twenty carbon atoms in the acyl moiety, the mole ratio of (A) to (B) being such that there is at least 0.5 mole of (B) for each mole of (A) with the proviso that (B) provides a

minimum of one equivalent of carboxylic acid reactant in the reaction mixture per mole of (A); or

II. at least one (C) ethylenically unsaturated aliphatic hydrocarbon or substituted aliphatic hydrocarbon reactant containing an average of at least about 50 aliphatic carbon atoms, at least one (D) low molecular weight monocarboxylic acid reactant which is an ethylenically unsaturated monocarboxylic acid acylating agent containing up to about 20 carbon atoms in the acyl moiety, and at least one (E) low molecular weight polycarboxylic acid reactant which is an ethylenically unsaturated polycarboxylic acid acylating agent containing up to about 20 carbon atoms in the acyl moiety, the mole ratio of (C): (D): (E) being such that there is at least about 0.5 mole of each of (D) and (E) per mole of (C) with the proviso that the combined amount of (D) and (E) provides a minimum of at least two equivalents of low molecular weight mono- and polycarboxylic acid reactants per mole of (C),

the total amount of chlorine employed in said process being sufficient to provide at least about 0.8 mole of chlorine per mole of (B) or at least about 0.8 mole of chlorine per the total number of moles of (D) and (E), respectively.

3,868,331

PROCESS FOR THE PARTIAL COMBUSTION OF HYDROCARBONACEOUS FUELS TO PRODUCE SUBSTANTIALLY SOOT-FREE GASES

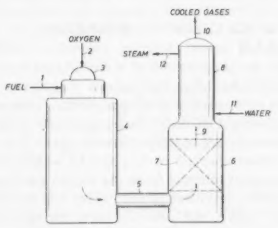
Nicolaas Van Lookeren Campagne, Rotterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed June 18, 1973, Ser. No. 370,996

Claims priority, application Great Britain, June 26, 1972, 29768/72

Int. Cl. C01b *2/14*

U.S. Cl. 252—373 **10 Claims**



1. In a process for the generation of a hydrogen and carbon monoxide-containing gas mixture by the partial combustion of a hydrocarbonaceous fuel with an oxygen-containing gas in the presence of steam in a partial combustion zone at a temperature of from about 1,000° to about 1,600°C and a pressure from 1 to 300 atmospheres whereby a crude hydrogen, steam, carbon dioxide and carbon-monoxide containing gas mixture containing contaminating amounts of soot in particulate form is obtained, the improvement which comprises substantially reducing the soot content of the crude gas mixture by passing the gas mixture into a soot-conversion zone which contains at least one bed of ceramic material and is maintained at substantially the same elevated temperature and pressure as that of the partial combustion zone, and retarding the passage of the soot particles through said soot-conversion zone for at least 5 seconds by adherence of said soot particles to said ceramic material whereby the soot particles are converted to carbon monoxide by reaction of the soot particles with combined stoichiometric amounts of steam and carbon dioxide in the crude gas mixture, reducing the soot content of the crude gas mixture to less than 1 percent by weight.

3,868,332

MASSIVE NICKEL CATALYSTS

James L. Carter, Chatham, N.J., and Wayne G. Custead, Elnora, N.Y., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 84,163, Oct. 26, 1970, Pat. No. 3,697,445, which is a continuation-in-part of Ser. No. 877,001, Nov. 14, 1969, abandoned. This application July 10, 1972, Ser. No. 270,165

Int. Cl. B01j *11/22, 11/34*

U.S. Cl. 252—452 **10 Claims**

6. A process for preparing a nickel-silica catalyst which comprises:

a. preparing an aqueous solution containing below about 30 g/l of silicate anion;

b. slurrying porous silica particles in a solution prepared in step (a);

c. preparing an aqueous solution containing less than 60 g/l of nickel ions;

d. adding the solution prepared in step (c) to the slurry prepared in step (b) at a substantially uniform rate; and

e. calcining the recovered solids.

3,868,333

TECHNETIUM CATALYST FOR HYDROCARBON REFORMING

Angus U. Blackham, and James L. Palmer, both of Provo, Utah, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 123,447, March 11, 1971,. This application Nov. 20, 1973, Ser. No. 417,651

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 **5 Claims**

1. A process for making a technetium catlyst comprising preparing an aqueous solution of a technetium salt, mixing a substrate material with said solution to form a slurry, adding ammonium sulfide to the slurry whereby technetium heptasulfide is precipitated on the substrate, partially drying said substrate and precipitate and heating said partially dried substrate and precipitate in the presence of hydrogen whereby the technetium heptasulfide is reduced to technetium on said substrate, thereby forming the technetium catalyst.

3,868,334

RESISTIVE GLAZE AND PASTE COMPOSITIONS

Paul R. Van Loan, Placentia, Calif., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 82,161, Oct. 19, 1970, Pat. No. 3,682,840. This application Apr. 21, 1972, Ser. No. 246,348

Int. Cl. H01b *1/08;* C03c *3/08, 3/10*

U.S. Cl. 252—520 **13 Claims**

1. A composition for firing into a resistive glaze, comprising in admixture:

as a conductant, finely divided RuO_2;

a glass frit consisting by weight of 55 to 75% PbO, 2 to 10% ZnO, 2 to 10% MnO, 5 to 20% SiO_2, 5 to 20% B_2O_3, and 0 to 5% ZrO_2; and

a temporary liquid binder for said conductant and frit components.

3,868,335

SETTLER FOR LIQUID-LIQUID EXTRACTORS

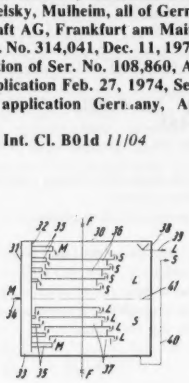
Hans-Martin Stonner, Frankfurt/Main; Ulrich Von Knoppe, Neu-Isenburg; Paul Weisner; Erhard Kraus, both of Obering, and Fritz Zigelsky, Mulheim, all of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany

Continuation of Ser. No. 314,041, Dec. 11, 1972, abandoned, which is a continuation of Ser. No. 108,860, April 25, 1970, abandoned. This application Feb. 27, 1974, Ser. No. 446,451

Claims priority, application Germany, Apr. 25, 1970, 2020305

Int. Cl. B01d *11/04*

U.S. Cl. 210—522 **9 Claims**



1. Phase separator for liquid-liquid extractors having a mixer and a settler which comprises a separator housing having inlet means for a mixture of liquid phases, outlet means for the separated pure light and heavy phases and internal means which promote the separation of said liquid phases consisting of a plurality of substantially horizontally extending, flat boxes, disposed one over the other, having an open top and closed bottom when positioned in the zone in which the light phase is separated and an open bottom and closed top when positioned in the zone in which the heavy phase is separated, each of said boxes having four sidewalls, one of said walls having inlet means for separately delivering to each box the mixture of phases to be separated, another of said walls being opposite said wall having inlet means and being spaced from the bottom of the open topped boxes and from the top of the open bottom boxes so as to define an edge of an outlet opening for separated pure phase, each of said outlet openings having a weir adjacent thereto for discharging separated pure phase into the surround zone in which the boxes are positioned, said wall defining the edge of said outlet opening extending vertically to the next adjacent box.

3,868,336

PROCESS FOR IMPROVING FLOWABILITY OF DETERGENTS

Louis R. Mazzola, Mahwah, and Paul Ferreri, Allendale, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 123,313, March 11, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,785

Int. Cl. C11d *3/066*

U.S. Cl. 252—527 **7 Claims**

1. A process for improving the flowability of a particulate anionic or nonionic built detergent composition containing an oily detergent-improving additive comprising:

i. preparing a spray-dried particulate detergent composition comprising about 0.5% to about 35% of an anionic detergent or nonionic detergent selected from the group consisting of (1) water-soluble ethylene oxide condensates of a base formed by condensing propylene oxide with propylene glycol, (2) compounds formed by the simultaneous polymerization of propylene oxide and ethylene oxide, and (3) ethoxylates of primary or secondary alcohols, said nonionic having detergent properties, and about 25% to about 80% of a detergent builder,

ii. intimately blending with said detergent composition about 0.5% to about 15% by weight, whole composition basis, of a particulate water-soluble siliceous flow-promoting agent selected from the group consisting of silica aerogels, silica xerogels, diatomaceous earth, sodium silico aluminate, calcium alumino silicate, magnesium silicate, and mixtures thereof, said water-insoluble siliceous substances having a pore volume of at least 2 milliliters per gram,

iii. blending with said oleophilic mixture about 1% to about 35% by weight, whole composition basis, and sufficient to improve the detergent characteristics of the detergent, of a detergency improver comprising a non-aqueous oily liquid substance selected from the group consisting of:

a. condensates of ethylene oxide and monohydric primary or secondary alcohols having about 8 to 16 carbon atoms and having an ethylene oxide content of about 10% to about 51%,

b. polymers of propylene oxide having a molecular weight of about 1,500 to about 1,800,

c. condensates of ethylene oxide and polymers of propylene oxide and polymers of propylene oxide having a molecular weight of about 1500 to about 1800, said condensates having from about 10% to about 20% ethylene oxide by weight in the molecule,

d. dialkyl phathates wherein the alkyl group has from 1–9 carbon atoms;

said particles of flow-promoting agent having absorbed thereon said oily detergency improver, and said detergency improver and said flow-promoting agent being external to the particles of said particulate detergent base composition.

3,868,337

VINYLIDENE FLUORIDE/HEXAFLUOROPROPYLENE COPOLYMER FOAMS

Paul Gros, Loches, France, assignor to Society Superflexit, Courbevoie, France

Filed Aug. 16, 1972, Ser. No. 281,151

Claims priority, application Great Britain, Aug. 19, 1971, 39036/71

Int. Cl. C08f *47/10;* **B29d** *27/04*

U.S. Cl. 260—2.5 R **13 Claims**

1. Process for the preparation of a closed-cell foam from a vinylidene fluoride/hexafluoropropylene copolymer of low viscosity, which comprises moulding a mixture comprising 80 to 120 parts by weight of the milled copolymer, 4 to 8 parts by weight of an azodicarbonamide blowing agent, 9 to 11 parts by weight of carbon black, 8 to 12 parts by weight of at least one vulcanising agent selected from the oxides and hydroxides of lead and calcium, mixtures of the oxides and hydroxides of lead or calcium with a salt selected from the inorganic and organic salts of lead and zinc, a mixture of ZnO and $PbCl_2$, and a mixture of MgO and zinc stearate, 1.8 to 2.2 parts by weight of an activator for the blowing agent, and 0.7 to 0.9 part by weight of a vulcanisation accelerator; the moulding being effected by a temperature of approximately from 140°C to 200°C; under a pressure of from 60 to 100 kg/cm², for a minimum period of about 30 minutes.

3,868,338

THERMOSETTING POLYESTER POWDER COATING COMPOSITIONS

Theron E. Parsons, III, and Francis J. Sheme, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,871

Int. Cl. C08b *21/08;* **C08g** *37/32*

U.S. Cl. 260—15 **7 Claims**

1. A thermosetting coating composition in the form of a powder having an average particle size range of from about 10 to about 300 microns comprising

a. from about 50% to about 90% by weight of a polyester derived from a dicarboxylic acid component, at least 50 mol percent of which is isophthalic acid, a glycol component, at least 50 mol percent of which is 2,2,4-

trimethylpentane-1,3-diol and from about 3 to about 10 mol percent of a polyol containing from two to 16 carbon atoms and having at least three primary hydroxyl groups,

b. from about 5% to about 45% by weight of cellulose acetate butyrate having a butyryl content of from about 30 to about 55% by weight, a hydroxyl content of from about 0.1 to about 5%, an acetyl content of from about 0.5 to about 15% by weight and a viscosity of between about 0.1 and 30 seconds,

c. from about 2% to about 15% by weight to a melamine crosslinking agent, and

d. from about 0.1% to about 3% by weight of the reaction product of an acid and a compound containing oxirane groups,

said powder being free of appreciable crosslinking.

3,868,339

DENTURE ADHESIVE PREPARATION

James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,742

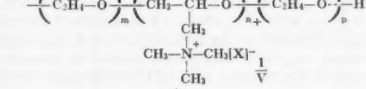
Int. Cl. C08b *21/32*; C08f *29/36*

U.S. Cl. 260—17 R **7 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0 to about 80 percent by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material having the formula:

wherein R_{cell} is the residue of an anhydroglucose unit, y is an integer having a value of from about 1,000 to about 5,000, and each R individually represents a substituent group of the general formula:



wherein:

m is an integer having a value of from zero to 10;

n is an integer having a value of from zero to 3;

p is an integer having a value of from zero to 10;

X is an anion; V is an integer which is equal to the valence of X; the average value of n per anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value of $m+p$ per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 20 to about 99 percent by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of copolymers of maleic acid with vinyl-lower alkyl-ether wherein the alkyl group has from one to five carbon atoms.

3,868,340

DENTURE ADHESIVE PREPARATION

James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plaines, N.J.

Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,622

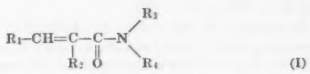
Int. Cl. C08f *29/00*, *33/08*

U.S. Cl. 260—17.4 ST **9 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0% to about 80% by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material selected from the group consisting of:

1. a copolymer of an acrylamide having the formula:



(I)

wherein R_1 is methyl or hydrogen; and R_2, R_3, and R_4 are each hydrogen or 1 to 7 carbon lower alkyl, with a vinyl quaternary ammonium salt selected from the group consisting of trialkylaminoalkyl acrylate salts, trialkylaminoalkyl methacrylate salts, and vinyloxyalkyltrialkylammonium salts, wherein the alkyl group contains from 1 to 7 carbon atoms; and

2. a copolymer of an acrylamide having the formula (I) above with a vinyl or alkyl-substituted vinyl pyridinum salt, wherein the alkyl group is 1 to 7 carbon lower alkyl; and

B. from about 20% to about 99% by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of gum karaya, gum arabic, gum Shiraz, gum tragacanth, pectin, pectinates, algin and alginates.

3,868,341

CLEAR FLAME RETARDANT COMPOSITION

Earl Salvator Sauer, Perry Hall, and William Charles Vesperman, Baltimore, both of Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 2, 1972, Ser. No. 258,964

Int. Cl. C08f *19/14*, *21/04*

U.S. Cl. 260—23 XA **14 Claims**

1. A clear flame-retardant composition, which includes a polymeric material consisting essentially of at least 80 percent, by weight, of polyvinyl chloride; 10 to 55 parts, by weight, per 100 parts, by weight, of the polymeric material of a phthalate plasticizer selected from the group consisting of di(N-octyl-n-decyl) phthalate, di(N-hexyl-n-decyl) phthalate, a di-isodecyl phthalate, a di-iso-octyl phthalate, a di-iso-nonyl phthalate, a di-tri-decyl phthalate and a tridecyl phthalate; 3 to 50 parts, by weight, per 100 parts, by weight, of the polymeric material of a phosphate plasticizer selected from the group consisting of triaryl phosphate and cresyl diphenyl phosphate; 2 to 5 parts, by weight, per 100 parts, by weight, of the polymeric material of a metallic stabilizer selected from the group consisting of a phosphite chelator, a barium stearate, a cadmium stearate, a barium ethyl hexoate, a barium-cadmium laurate, and a barium-cadmium myristate; 0.25 to 1.0 parts, by weight, per 100 parts, by weight, of the polymeric material of a lubricant selected from the group consisting of metallic stearate and stearic acid; 0.25 to 1.0 parts, by weight, per 100 parts, by weight, of the polymeric material of an ultraviolet absorber selected from the group consisting of substituted benzophenones and substituted acryonitriles; 1 to 4 parts, by weight, per 100 parts, by weight, of the polymeric material of an epoxy resin; and, 1 to 8 parts, by weight, per

100 parts, by weight, of the polymeric material of an epoxy plasticizer.

3,868,342

PROCESS FOR THE PREPARATION OF CONDENSATION PRODUCTS OF SILICON-CONTAINING AMINES WITH EPOXIDE COMPOUNDS

Robert Magne, Sainte-Foy-les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 24, 1971, Ser. No. 201,965

Claims priority, application France, Nov. 26, 1970, 70.42483

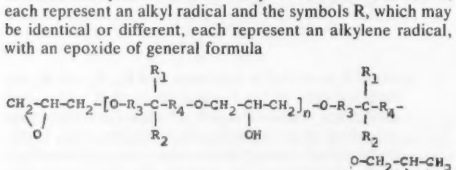
Int. Cl. C08g *53/18, 31/10*

U.S. Cl. 260—29.2 M **8 Claims**

1. An aqueous emulsion comprising an alkylhydrogenopolysiloxane and 2–15% by weight based on the weight of the alkylhydrogenopolysiloxane of a condensate having free amine groups, obtained by reaction of a silicon-containing amine of general formula

$(R'O)_3Si\ R - NH - R - NH_2$

in which the symbols R' which may be identical or different, each represent an alkyl radical and the symbols R, which may be identical or different, each represent an alkylene radical, with an epoxide of general formula



in which R_1 and R_2, which may be identical or different, each is an alkyl radical or hydrogen, R_3 and R_4 which may be identical or different each are substituted or unsubstituted para-phenylene radicals and n is an integer of at least 1, or, when R_1 and R_2 each represent methyl and R_3 and R_4 each represent p-phenylene, *n* is 0; the weight ratio of the silicon-containing amine to the epoxide being at least 0.5:1.

3,868,343

COATED PLASTIC SUBSTRATES FOR COATING COMPOSITIONS

Edward J. Stengle, and James J. Tillman, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 12, 1973, Ser. No. 340,071

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 R **12 Claims**

1. A method for making a coating solution composition having prolonged shelf-life and which is rapidly convertible to a hard, strongly adhered, abrasion-resistant, mar-resistant, chemical-resistant, and acetone-resistant coating which comprises:

1. heating methyltrialkoxysilane, wherein the alkoxy group contains between 1 to 6 carbon atoms, with between about 1.5 to about 10 moles of water per mole of total silane, in the presence of an effective catalyzing amount of a acid hydrolysis catalyst, between about 40°C. up to and including the reflux temperature for a period of about 1–10 hours so as to produce a substantially gel-free solution which contains a dissolved, hydrolyzed and partially condensed organopolysiloxane,
2. concentrating the solution containing said dissolved, hydrolyzed and partially condensed organopolysiloxane by heating to remove some but not all volatile material, including alkanol by-product and some water, so as to obtain a solution of a hydrolyzed and further partially condensed organopolysiloxane,
3. adding to said solution containing said hydrolyzed and further partially condensed organopolysiloxane in an amount of between about 3% to about 15% by weight based on organopolysiloxane solids an alkylated melamine formaldehyde partial condensate resin which is soluble in said solution wherein alkylation is effected with methanol and a C_3–C_4 alkanol in a mole ratio of methanol to said alkanol of at least about 1:1.

3,868,344

OIL EXTENDED MOLECULAR WEIGHT CONTROLLED ALFIN GUMS

Raymond G. Newberg, Wyoming, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 116,597, Feb. 18, 1971, abandoned, which is a continuation of Ser. No. 4,447, Jan. 20, 1970, abandoned, which is a continuation of Ser. No. 601,266, Nov. 14, 1966, abandoned. This application Mar. 16, 1973, Ser. No. 341,803

Int. Cl. C08c *11/18, 11/22*

U.S. Cl. 260—33.6 AQ **11 Claims**

1. A workable rubber composition having a Mooney viscosity ML1+4 (100° C.) of 24 to less than about 60 which comprises

an alfin catalyzed, molecular weight controlled polymer containing a conjugated diolefin having no more than 12 carbon atoms and having a Mooney viscosity ML1+4 (100° C.) of about 30 to about 80 and a molecular weight of about 200,000 to 750,000,

at least 30 parts up to 150 parts per 100 parts of said polymer of an oily liquid hydrocarbon having a boiling point above about 232° C., and from about 50 to 150 parts of carbon black per 100 parts of said polymer.

3,868,345

ELASTOMERS MADE FROM HARDENABLE MASSES BASED ON DIORGANOPOLYSILOXANES

Gunter Kratel, Sankt Mang; Gunter Stohr, Kempten; Georg Vogt, Sankt Mang, and Wolfgang Hechtl, Burhausen, all of Germany, assignors to Elektroschemelzwerk Kempten GmbH, Munich, Germany

Filed Mar. 8, 1973, Ser. No. 339,261

Claims priority, application Germany, Mar. 9, 1972, 2211377

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **9 Claims**

1. In elastomers made from masses hardenable at room temperature or slightly higher temperatures, said masses being based on diorganopolysiloxanes and containing reinforcing fillers of SiO_2 having a surface area of at least 50 m^2/g reacted with organosilicon compounds in amounts of 3–25 percent by weight, the improvement that the organosilicon compounds used have the general formula

$(R_3Si)_aZ$

wherein R stands for the same or different monovalent hydrocarbon radicals, *a* is 1 or 2, Z represents a member of the group consisting of halogen, hydrogen and a radical of the formula —OH, —OR, —NRX, —ONR_2, —SR, —OOCR, —O—, —N(X)— and —S—, wherein R is as defined above, and X stands for hydrogen or the same radicals as R, said reaction being carried out under mechanical impact to increase the bulk weight of the resulting SiO_2 to 150–320 grams per liter.

3,868,346

HEAT RESISTANT POLYMERIC COMPOSITIONS

Edward W. Merrill, Cambridge, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Continuation-in-part of Ser. Nos. 107,570, Jan. 18, 1971, abandoned, and Ser. No. 233,935, March 3, 1972, Pat. No. 3,774,623, which is a division of Ser. No. 888,505, Dec. 29, 1969, Pat. No. 3,679,625. This application Dec. 14, 1972, Ser. No. 315,102

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **8 Claims**

1. A heat resistant composition comprising a silicone polymer which polymer does not evolve a toxic gas or vapor when oxidized at elevated temperatures and an alkali metal borate

hydrate intimately admixed, with the borate retained within said silicone, said borate having a melting point below the temperature wherein substantial thermal decomposition of the silicone occurs and being reactive with silica to form a borosilicate glass, the concentration of said borate being sufficient to render the composition fire retardant and being between about 50 and 80 percent by weight of said composition.

3,868,347

PROCESS FOR THE PRODUCTION OF POLYVINYL CHLORIDE-COATED SILICATE-CONTAINING MATERIALS

Alex Sabel, and Walter Popp, both of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Oct. 17, 1973, Ser. No. 407,177

Claims priority, application Germany, Oct. 17, 1972, 2250868

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.15 **7 Claims**

1. A method for the production of a polyvinyl chloride-coated silicate-containing material consisting essentially of suspending a water-insoluble silicate-containing material in an aqueous solution containing a catalytic amount of a water-soluble persulfate, by agitation, heating said suspension to a temperature of from 30°C to 80°C, introducing a monomer mixture of (1) vinyl chloride containing up to 30 percent by weight based on said vinyl chloride of monomers copolymerizable with vinyl chloride having only carbon, hydrogen and oxygen atoms and (2) from 0.5 percent to 30 percent by weight of vinyl chlorosilane, based on the monomer mixture with vinyl chloride at such a rate whereby the pressure is maintained below the saturation vapor pressure of vinyl chloride for a time sufficient to effect polymerization and recovering said polyvinyl chloride-coated silicate-containing material.

3,868,348

THERMOSTABLE HETEROCYCLIC POLYMERS OF AROMATIZED BIS ADDUCTS OF DIELS-ALDER REACTION BETWEEN MALEIC ANHYDRIDE AND BISFURANIC COMPOUNDS

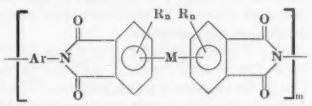
Alfred Anisimovich Berlin, Lenisky prospekt, 57, kv. 9; Boris Izrailevich Liogonky, ulitsa 26 bakinskikh komissarov, 7, korpus 4, kv. 45, and Boris Isaakovich Zapadinsky, prospekt Vernadskogo, 11/19, kv. 221, all of Moscow, U.S.S.R.

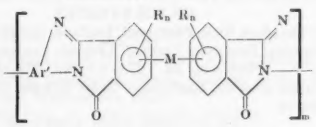
Continuation of Ser. No. 102,910, Dec. 30, 1970, abandoned. This application May 14, 1973, Ser. No. 359,890

Int. Cl. C08g *20/32*

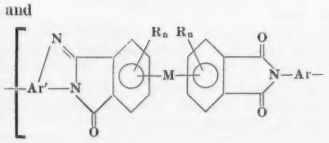
U.S. Cl. 260—47 CP **18 Claims**

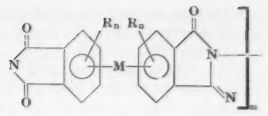
1. Thermostable heterocyclic polymers selected from the group consisting of polyimide, polyimidazopyrrolone, and a copolymer of an imide and imidazopyrrolonic structure and consisting substantially of units of the general formulae:





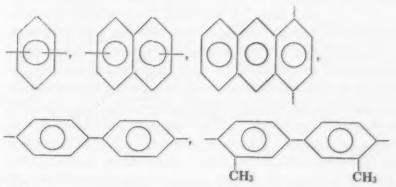
and



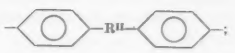


where M stands for:

a. —CH=N—R^{I}—N=CH—; R^{I} is arylene selected from the group consisting of

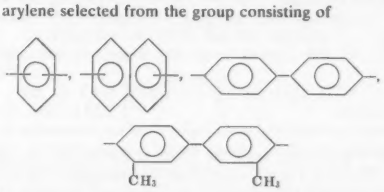


and

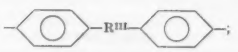


R^{II} is selected from the group consisting of CH_2, O, SO_2, S and NH;

b. arylene selected from the group consisting of



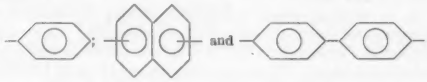
and



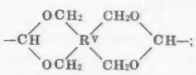
R^{III} is selected from the group consisting of CH_2, O and SO_2;

c.

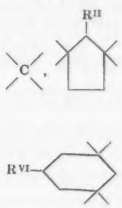
R^{IV} is arylene selected from the group consisting of



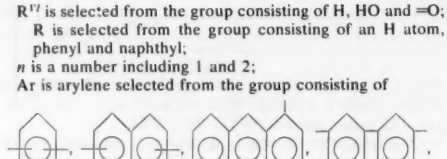
or d.



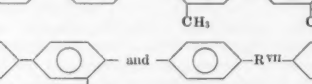
R^{V} is selected from the group consisting of



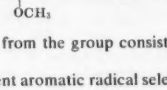
R^{VI} is selected from the group consisting of H, HO and =O;
R is selected from the group consisting of an H atom, phenyl and naphthyl;
n is a number including 1 and 2;
Ar is arylene selected from the group consisting of



R^{VIII} is selected from the group consisting of CH_2, O, SO_2, S and NH;
Ar' is a tetravalent aromatic radical selected from the group consisting of



and



R^{VIII} is selected from the group consisting of CH_2 and O, and *m* is a number sufficient for provision of an intrinsic viscosity of the polymers in a solution of sulphuric acid of at least 0.06 at 25°C.

3,868,349

PERMANENT PRESS FABRIC RESIN AND PROCESSES THEREFOR

Thomas M. Powanda, Middlesex; Lawrence B. Holzman, West Orange, and James E. Tracy, Bernardsville, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 135,778, April 20, 1971, Pat. No. 3,753,648. This application May 3, 1973, Ser. No. 357,048

Int. Cl. C08g 9/26

U.S. Cl. 260—67.7 **9 Claims**

1. A method which comprises reacting 2,7-dioxo-4,5-dimethyl-decahydro-pyrimido-[4,5-d]-pyrimidine (A) with glyoxal in a hydroxylic medium to form a dihydroxyethylene-substituted adduct (B), and reacting adduct (B) with between about 1.0 and about 3.0 molar proportions of formaldehyde, the resulting methylolated derivative composition (C) being useful as an aminoplast material for imparting permanent press properties to fabrics.

3,868,350

THERMOPLASTIC POLYURETHANE POLYUREA POWDERS

Helmut Reiff, Cologne; Harro Witt, Dormagen, and Dieter Dieterich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1973, Ser. No. 364,180

Claims priority, application Germany, May 31, 1972, 2226526

Int. Cl. C08g 22/00, 22/00

U.S. Cl. 260—77.5 Q **17 Claims**

1. A process for the production of thermoplastic polyurethane-polyurea powders having an average particle diameter of from 10 to 1,000 μ said process comprising stirring and reacting:

a. polyurethanes containing free NCO groups and ionic groups, said ionic groups being present in the polyurethanes in an amount such that the end products have an ionic group capable of salt formation in a content of from 0.01 to 0.15 milliequivalents per gram, with

b. primary and/or secondary diamines having aliphatic amino groups and/or dicarboxylic acid-bis-hydrazides

at an NH to NCO ratio of from between 0.1 to 0.95 and in the presence of water until said powder is formed and recovering said powder.

3,868,351

SOLUTION PROCESS FOR THE PREPARATION OF POLYIMDIES FROM DIAMINES AND ANHYDRIDES

John D. Hand, and Wendell G. Whitehouse, both of Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 94,529, Dec. 2, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,631

Int. Cl. C08g 20/20

U.S. Cl. 260—78 UA **12 Claims**

1. A process for the preparation of a solid polyimide prepolymer consisting essentially of

a. dissolving a difunctional amine having the formula $H_2N - R - NH_2$

where R consists of two arylene groups joined through an alkylene group of from 1 to 3 carbon atoms; and an anhydride of an aliphatically unsaturated dicarboxylic acid having the formula

where R^1 is a divalent group containing up to about 30 carbon atoms and has at least one carbon-to-carbon double bond in an inert solvent to form a solution containing from about 2 to about 3 moles of anhydride for each mole of amine;

b. heating said solution at a temperature not in excess of about 75°C to form a condensation product in which the amine groups have been substantially completely reacted;

c. adding said difunctional amine as above to the reaction mixture from step (b) to provide a solution containing from about 2 to about 3 moles of condensation product for each mole of amine; and

d. heating the solution of step (c) at a temperature not in excess of about 75°C until formation of said prepolymer is substantially complete.

3,868,352

PROCESS FOR THE CONTINUOUS POLYMERISATION OF POLYAMIDES

John Theodore Rich, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1973, Ser. No. 391,259

Claims priority, application Great Britain, Sept. 7, 1972, 41488/72

Int. Cl. C08G 20/00; C08f 1/98

U.S. Cl. 260—78 R **2 Claims**

1. A continuous process for the manufacture of high molecular weight linear polyamides by condensation polymerisation comprising passing an aqueous solution of a polyamide-forming monomer under conditions of elevated temperature and super-atmospheric pressure through elongate reaction zone defined by the following conditions;

I d increases gradually and/or in one or more stages, but never decreases, as v increases.

II V has a value from 1600Q to 10000Q,

III $\log d_{max} = 1.00 + 0.143 \tan^{-1}[(0.1\ v/Q) - 40] + 0.36 \log Q$.

IV $\log d_{min} = 0.67 + 0.250 \tan^{-1}[(0.002\ v/Q) - 2] + 0.36 \log Q$.

Q = rate of output of polyamide (throughput) in kilograms per hour

V = total volume of the reaction zone in cubic centimetres

v = volume of the reaction zone from its inlet end up to a given point along its length in cubic centimetres.

d = diameter of reaction zone at any given point along its length in millimetres

d_{max} = maximum diameter of reaction zone at any given point along its length in millimetres

d_{min} = the minimum value of the above diameter, at least the inner surface of said elongate reaction zone comprising metallic titanium.

3,868,353
HALF AMIDE-HALF AMMONIUM SLATS OR ALPHA-OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Earle E. Allen, Jr., 4750 South Kenwood, Chicago, Ill. 60615; James A. Smit, 3917 South Washington, Country Club Hills, Ill. 60559; Robert R. Walter, 17695 South Hillcrest Dr., Westmont, Ill. 60477, and Roger H. Jansma, 261 Juniper, Park Forest, Ill. 60466

Division of Ser. No. 277,643, Aug. 3, 1972,. This application July 18, 1974, Ser. No. 489,593

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 UA 5 Claims

1. A water dispersible half amide-half ammonium salt of a copolymer of maleic anhydride and an alpha olefine containing 4 to 6 carbon atoms.

3,868,354
NEW CATALYST FOR HYDROGENATION OF ELASTOMERS AND THE PROCESS OF HYDROGENATION

Adel Farhan Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 13, 1973, Ser. No. 424,263

Int. Cl. C08d *5/00*

U.S. Cl. 260—94.7 H 3 Claims

1. The process of hydrogenating an unsaturated elastomer which comprises hydrogenating the same in solution in an aliphatic solvent in the presence of 0.02 mM to 1.0 mM per gram of elastomer of a reduced cobaltous bis-lactam catalyst, which lactam having the formula

$$CH_2{-}(CH_2)_n{-}CO{-}NH$$

in which n=0 to 20 and which reducing agent is a trialkyl or triaryl aluminum or a dialkyl or diaryl aluminum hydride at a temperature of 250° to 500° C. and a pressure of 25 to 1,000 psig.

3,868,355
FOAM SEPARATION OF GLUTEN AND STARCH

Nelson E. Rodgers, Deephaven, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 26, 1972, Ser. No. 318,145

Int. Cl. A23j *1/12*

U.S. Cl. 260—112 G 22 Claims

1. A process of separating starch and gluten components of wheat endosperm obtained by a hydroprocessing method wherein the normal cellular structure of the endosperm is substantially completely disrupted and during which the endosperm is dispersed in an aqueous medium, the starch granules are maintained in a substantially intact and ungelatinized form and the gluten protein is dispersed and wherein the husks are removed from said product; the endosperm comprising wheat starch granules which are substantially intact, ungelatinized and unoccluded by gluten protein; homogeneous, smoothly contoured gluten protein particles containing only minor amounts of occluded starch, said gluten protein being substantially undenatured with respect to doughing function; said process comprising the steps of:

a. providing an aqueous dispersion comprising said wheat starch granules, said gluten protein particles and wheat solubles having a pH between 3.8 and 6.5;

b. incorporating gas into said aqueous dispersion to create a gas emulsion wherein the gas bubbles are spherical and are predominantly less than 1,000 microns in diameter;

c. allowing said gas emulsion to consolidate into a top layer of foam, comprising particles of gluten protein and some starch granules entrapped in the interstices of compacted spherical bubbles, and a bottom layer, comprising starch granules suspended in an aqueous solution of wheat solubles; and,

d. separating said foam layer containing gluten protein from said dispersion of starch and solubles.

3,868,356
N-ACYLATED, O-SUBSTITUTED INSULIN DERIVATIVES

Derek George Smyth, London, England, assignor to National Research Development Corporation, London, England

Filed Jan. 26, 1972, Ser. No. 221,059

Claims priority, application Great Britain, Jan. 28, 1971, 3388/71

Int. Cl. C07c *103/52*; C07g *7/00*; A61k *17/04*

U.S. Cl. 260—112.7 22 Claims

1. A substituted insulin in which the substituents are located on one or more of the amino groups of the A_1(glycine), B_1(phenylalanine), and B_{29}(lysine) amino acid units and on one or more of the tyrosine hydroxyl groups, at least one of said amino groups is monoacylated with the monobasic acyl residue of a dicarboxylic acid containing no more than eight carbon atoms, and at least one of the tyrosine hydroxyl groups is blocked by an O-substituent selected from the group consisting of acetyl, glutaryl, cyclopropanecarbonyl, cyclobutanecarbonyl and carbamyl.

3,868,357
ALKANEDIOIC ACID DERIVATIVES OF INSULIN

Derek George Smyth, and Arthur Sai Chun Ko, both of London, England, assignors to National Research Development Corporation, London, England

Filed Jan. 26, 1972, Ser. No. 221,060

Claims priority, application Great Britain, Jan. 28, 1971, 3387/71

Int. Cl. C07c *103/52*; C07g *7/00*; A61k *17/02*

U.S. Cl. 260—112.7 18 Claims

1. A mono-, di- or trisubstituted insulin in which the substituents are located on one or more of the amino groups of the A_1 (glycine), B_1 (phenylalanine) and B_{29} (lysine) amino acid units, at least one of said groups being monoacylated with the monobasic acyl residue of a dicarboxylic acid selected from the group consisting of succinic acid and glutaric acid.

3,868,358
PROTAMINE-INSULIN PRODUCT

Richard L. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 139,120, April 30, 1971, Pat. No. 3,758,683. This application Mar. 2, 1973, Ser. No. 337,511. The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.

Int. Cl. C07c *103/52*; C07g *7/00*; A61k *17/02*

U.S. Cl. 260—112.7 2 Claims

1. A stable hypoglycemic composition comprising a protamine-insulin salt complex containing from about 0.2 mg. to

about 1.5 mg. of protamine for each 100 units of insulin and an insulin salt having less than about 0.05 percent zinc selected from the group consisting of an alkali metal salt of insulin and an ammonium salt of insulin.

3,868,359

SYMMETRICAL TRISAZO SEQUENTIAL FREE RADICAL INITIATORS HAVING TWO DIFFERENT AZO FUNCTIONS

Chester Stephen Sheppard, 726 Parkhurst Blvd., Tonawanda, N.Y. 14150, and Ronald Edward MacLeay, 10 Mahogany Dr., Williamsville, N.Y. 14221

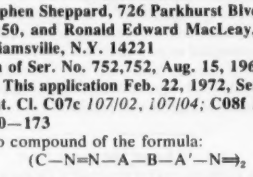
Division of Ser. No. 752,752, Aug. 15, 1968, Pat. No. 3,649,614. This application Feb. 22, 1972, Ser. No. 228,242
Int. Cl. C07c *107/02, 107/04*; **C08f** *19/10*
U.S. Cl. 260—173 **5 Claims**

1. An azo compound of the formula:

$$(C-N=N-A-B-A'-N=)_2$$

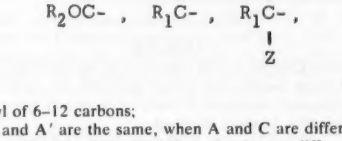
where:

a. C is selected from



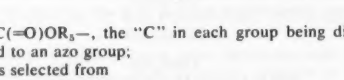
and aryl of 6–12 carbons;

b. A and A′ are the same, when A and C are different, or are different, when A and C are the same or different, and are selected from



and $-C(=O)OR_5-$, the "C" in each group being directly attached to an azo group;

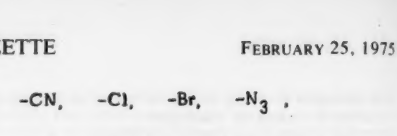
c. B is selected from

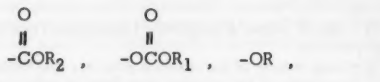


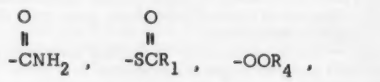
and a direct bond;

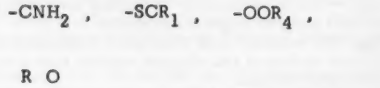
d. X′ is an inorganic anion;

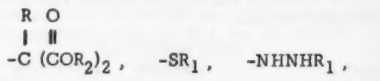
e. the Zs are separately selected from

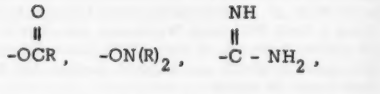


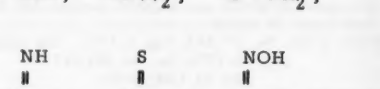


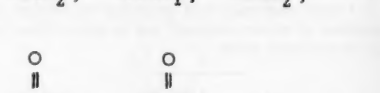


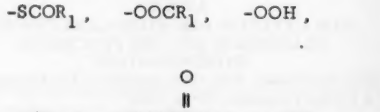


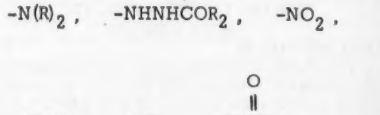


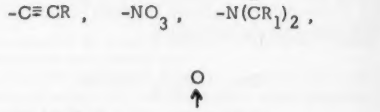




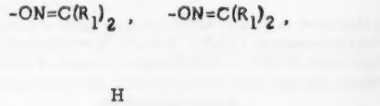


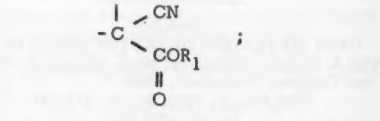






and





f. the Rs are separately selected from hydrogen, lower alkyl of 1–6 carbons, and aryl of 6–12 carbons;

g. The R_1s are separately selected from lower alkyl of 1–6 carbons or aryl of 6–12 carbons;

h. The R_2s are separately selected from lower alkyl of 1–6 carbons;

i. R_4 is t-alkyl of 4–12 carbons;
j. R_5 is alkylene of 1–12 carbons; and
k. R_2 and R_3, when taken together with the tertiary carbon linked to Z, form cycloalkyl of 5–8 carbons.

3,868,360
PROCESS FOR PREPARING 2-DEROXY-3-DESAMINO-2,3-EPIMINO-AMINOGLYCOSIDES AND INTERMEDIATES USEFUL THEREIN

Peter J. L. Daniels, Cedar Grove, and Jay Weinstein, Bloomfield, both of N.J., assignors to Shering Corporation, Bloomfield, N.J.

Filed Oct. 24, 1972, Ser. No. 299,983
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 AB **14 Claims**

1. In the process for preparing a 2''-deoxy-3''-desamino-2'',3''-epimino-4,6-di-(aminoglycosyl)-2-deoxystreptamine wherein an antibacterially active 4,6-di- (aminoglycosyl) -2-deoxystreptamine having a 2''-hydroxy function and a 3''-primary or secondary amino function, the primary and secondary amino groups of which are protected by carbobenzyloxy groups, and primary and secondary hydroxyl groups of which are converted to a triphenylmethyl ether of a primary hydroxyl group or a cyclic ketal or acetal of protectable neighboring hydroxyl groups, is treated with a hydrocarbonsulfonyl halide in a tertiary amine, the thereby formed 2''-O-hydrocarbonsulfonyl-per-N-carbobenzyloxy 4,6-di-(aminoglycosyl)-2-deoxystreptamine is treated with hydrogen in the presence of a catalyst, or with an alkali metal in liquid ammonia, whereby the N-carbobenzyloxy groups are removed; and the resulting 2''-O-hydrocarbonsulfonyl 4,6-di-(aminoglycosyl)-2-deoxystreptamine is converted to a 2''-deoxy-3''-desamino-2'',3''-epimino 4,6-di-(aminoglycosyl)-2-deoxystreptamine by spontaneous transformation or by heating in a lower alkanol alone or together with an alkali metal salt of said alkanol;

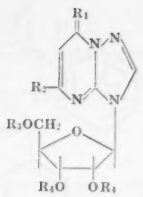
the improvement which comprises protecting primary amino groups and secondary amino groups capable of oxazolidine formation with an aldehyde and a neighboring hydroxyl group in said antibacterial active 4,6-di-(aminoglycosyl)-2-deoxystreptamine by Schiff base-oxazolidine condensation products with an aldehyde devoid of hydroxyl groups; and, after preparation of the 2''-O-hydrocarbonsulfonyl ester thereof, treating the resulting 2''-O-hydrocarbonsulfonyl 4,6-di-(aminoglycosyl)-2-deoxystreptamine having N-protecting-Schiff base -oxazolidine groups with dilute aqueous acid to a pH in the range of from about 1 to about 5, whereby said N-protecting Schiff base-oxazolidine groups are removed.

3,868,361
S-TRIAZOLO[2,3-A] PRYIMIDINE NUCLEOSIDES

Richard L. Tolman, 18253 Bayberry Way, Irvine, Calif. 92664, and Ganapathi R. Revankar, 20312 Santa Ana Ave., No. 8, Santa Ana, Calif. 92707

Filed Mar. 12, 1973, Ser. No. 340,224
Int. Cl. C07d *51/50*
U.S. Cl. 260—211.5 R **17 Claims**

1. A compound of the structure:



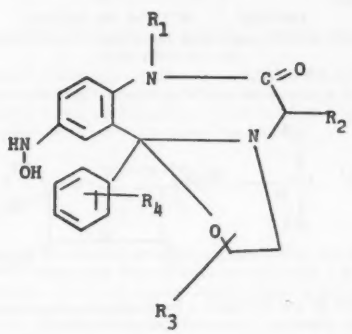
wherein R_1 is O or NH; R_2 is Cl, H, NH_2, $NHCH_3$, $N(CH_3)2$, $NHNH_2$, CH_3, SH, or OH; R_3 is H, acetyl, or H_2PO_3; and R_4 is H or acetyl.

3,868,362
OXAZOLOBENZODIAZEPINES

Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, both of N.J., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Nov. 29, 1973, Ser. No. 420,119
Int. Cl. C07d *85/48*, *53/06*
U.S. Cl. 260—239.3 T **2 Claims**

1. A compound of the formula



wherein

R_1 signifies hydrogen, lower alkyl, C_4-C_{10} cycloalkyl-lower alkyl, lower alkoxy-lower alkyl, hydroxy-lower alkyl, or di-lower alkylamino-lower alkyl;
R_2 signifies hydrogen or lower alkyl,
R_3 signifies hydrogen or lower alkyl;
R_4 signifies hydrogen or halogen

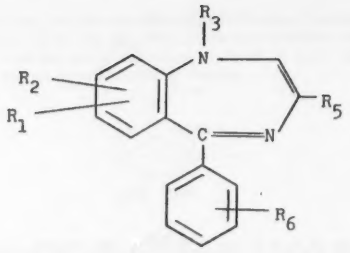
and the pharmaceutically acceptable acid addition salts thereof.

3,868,363
1H-5-PHENYL-1,4-BENZODIAZEPINES

James Valentine Earley, Cedar Grove; Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed June 5, 1974, Ser. No. 476,353
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD **2 Claims**

1. A compound of formula



wherein

R_1 and R_2 are each selected from the group consisting of hydrogen, halogen, trifluoromethyl and nitro;

R_3 is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl-lower alkyl, and di-lower alkylamino-lower alkyl;

R_5 is hydrogen or lower alkyl;

R_6 is selected from the group consisting of hydrogen and halogen,

and the pharmaceutically acceptable acid addition salts thereof.

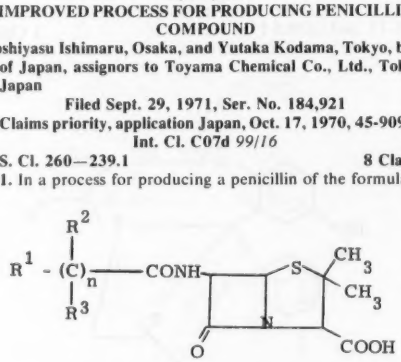
3,868,364

IMPROVED PROCESS FOR PRODUCING PENICILLIN COMPOUND

Toshiyasu Ishimaru, Osaka, and Yutaka Kodama, Tokyo, both of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

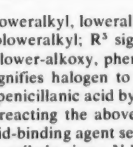
Filed Sept. 29, 1971, Ser. No. 184,921
Claims priority, application Japan, Oct. 17, 1970, 45-90971
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **8 Claims**

1. In a process for producing a penicillin of the formula:

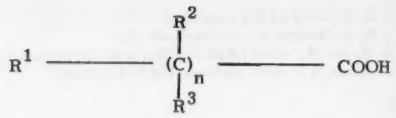


wherein R^1 and R^2 signify a hydrogen atom or a lower alkyl, phenyl, phenoxy, 3-phenyl-5-methyl-4-isoxazolyl, or 3-(halo-substituted phenyl)-5-methyl-4-isoxazolyl group; R^3 signifies a hydrogen atom, or an amino group and n signifies the numeral 0 or 1, the improvement which comprises:

reacting at a temperature below 60°C a triloweralkylamine, N-methyl-piperidine or N-methylmorpholine salt of 6-aminopenicillanic acid with a silylhalide having the formula:



wherein R^4 signifies loweralkyl, loweralkoxy, benzyloxy, phenyl, phenoxy or halologweralkyl; R^5 signifies loweralkoxy or halogen; R^6 signifies lower-alkoxy, phenoxy, benzyloxy or β-haloethoxy and X signifies halogen to protect the carbonyl group of the 6-aminopenicillanic acid by forming a mixed acid anhydride grouping; reacting the above obtained product in the presence of an acid-binding agent selected from the group consisting of triloweralkylamine, N,N-diloweralkylaniline, pyridine, quinoline, N-loweralkylmorpholine, N-loweralkylpiperdine, picoline and lutidine, with a reactive derivative of a carboxylic acid having the formula:



wherein R^1, R^2, R^3 and n are the same as indicated above, and then solvolyzing the product with water or loweraliphatic alcohol to remove the protecting group of the carboxyl group.

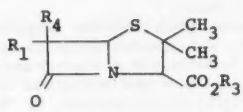
3,868,365

METHOD FOR PREPARING 6-SUBSTITUTED PENICILLINS BY REPLACEMENT OF OXYGEN CONTAINING GROUPS

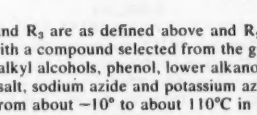
Joseph Edward Dolfini, Princeton, N.J.; William A. Slusarchyk, Belle Mead, N.J., and William Henry Koster, Lawrenceville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 6, 1972, Ser. No. 312,470
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **4 Claims**

1. A process for the preparation of compounds of the formula:



wherein R_1 is selected from the group consisting of benzalimino, p-nitrobenzalimino, p-methoxybenzalimino, thienylacetamido, α-aminophenylacetamido, α-amino-1,4-cyclohexadienylacetamido, phenylacetamido, and phenoxyacetamido; R_4 is selected from the group consisting of lower alkoxy, lower alkanoyloxy, phenoxy, and azido; and R_3 is selected from the group consisting of hydrogen, methyl, t-butyl, trichloroethyl, trimethylsilyl, p-methoxybenzyl, and a cation; which comprises reacting a compound of formula:



wherein R_1 and R_2 are as defined above and R_2 is lower alkanoyloxy; with a compound selected from the group consisting of lower alkyl alcohols, phenol, lower alkanoic acid or its heavy metal salt, sodium azide and potassium azide at a temperature of from about −10° to about 110°C in the presence of a catalyst selected from the group consisting of mercuric acetate, mercuric chloride, silver acetate, silver tetrafluorborate, thallium acetate, and dimethoxy mercury.

3,868,366
PROCESSES FOR THE PREPARATION OF 5BETA-H-6-KETO STEROIDS

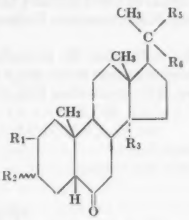
Andor Furst; Andre Furlenmeier, both of Basel; Albert Langemann, Binningen; Guy Waldvogel, Riehen, all of Switzerland; Peter Hocks, Berlin, Germany; Ulrich Kerb, Berlin, Germany, and Rudolf Wiechert, Berlin, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 197,928, Nov. 11, 1971, abandoned, which is a division of Ser. No. 42,595, June 1, 1970, Pat. No. 3,655,650, which is a division of Ser. No. 709,238, Feb. 29, 1968, Pat. No. 3,557,097, which is a division of Ser. No. 571,187, Aug. 9, 1966, abandoned. This application Mar. 1, 1973, Ser. No. 337,040

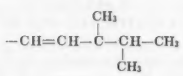
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R 6 Claims

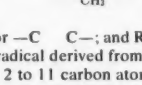
1. The process for producing a compound of the formula:



wherein R_1 and R_2 are independently members selected from the group consisting of hydroxy, a radical derived from an aliphatic carboxylic acid of up to 11 carbons by removal of the hydrogen of the carboxyl group and lower alkoxy; $R_1$and R_2 when taken together and R_2 is in the β-orientation are lower alkylenedioxy; R_2 is hydrogen or hydroxy; R_5 when taken along is hydrogen; R_6 when taken alone is a member selected from the group consisting of $-CO_2Z$, $-CHO$, $-CH-(O\text{-lower alkyl})_2$,



and



A is $-CH_2-CH_2$ or $-C\quad C-$; and R_{12} and R_{13} are hydrogen, hydroxy, a radical derived from an aliphatic carboxylic acid of from 2 to 11 carbon atoms by removal of the hydrogen of the carboxyl group or tetrahydropyranyloxy; $R_5$and R_6 when taken together are oxo; Z is a member selected from the group consisting of hydrogen and lower alkyl

which comprises isomerizing the corresponding 5,6-oxido steroid with an acid catalyst selectd from the group consisting of sulfuric acid, perchloric acid, selenous acid, p-toluene sulfonic acid, boron trifluoride, magnesium bromide, mercury chloride and aluminium chloride.

3,868,367
4-HYDROXY-3-(5-ISOXAZOLYLCARBAMOYL)-2H-1,2-BENZOTHIAZINE 1,1-DIOXIDES

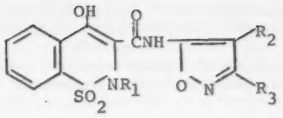
Harold Zinnes, Rockaway; Martin L. Schwartz, Gillette; Neil A. Lindo, Chatham, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 11, 1974, Ser. No. 460,266

Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R 3 Claims

1. A compound of the formula:



wherein R_1, R_2 and R_3 are hydrogen or alkyl of 1 to 7 carbon atoms and nontoxic pharmaceutically acceptable salts thereof.

3,868,368
PROCESS FOR PREPARING A 7-AMINOCEPHALOSPORIN ESTER

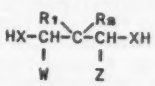
Lowell D. Hatfield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 30, 1971, Ser. No. 203,398

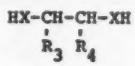
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 7 Claims

1. A process for preparing solid, crystalline p-nitrobenzyl 7-amino-3-methyl-3-cephem-4-carboxylate hydrochloride which comprises reacting the imino chloride of a p-nitrobenzyl 7-acylamido-3-methyl-3-cephem-4-carboxylate with from 2 to 3 moles of a diol selected from the group consisting of (a) a beta diol of the formula



wherein each X is oxygen or sulfur, each of W and Z is hydrogen or C_1 to C_2-alkyl and each of R_1 and R_2 is hydrogen or a hydrocarbon moiety such that the 1,3-diol has from 3 to 15 carbon atoms; or (b) an alpha diol of the formula



wherein each X is oxygen or sulfur, and each of R_3 and R_4 is hydrogen or alkyl such that the molecule has from 2 to 12 carbon atoms, in an inert, organic liquid solvent in the presence of hydrogen halide.

3,868,369
3-HETEROCYCLICTHIOMETHYLCEPHALOSPORINS

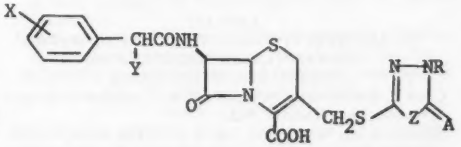
David Alan Berges, Audubon, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Nov. 14, 1972, Ser. No. 306,507

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 10 Claims

1. A compound of the formula



where

X is H, CH_2OH, SR, or OR;

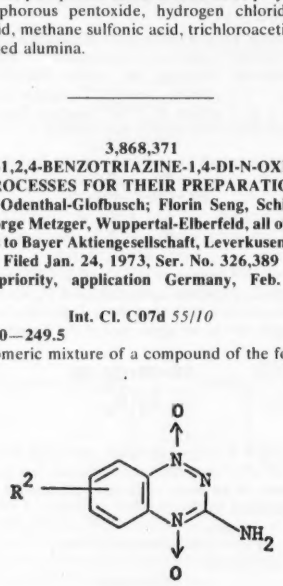
Y is NH_2 or OH;
A is O or S;
Z is NR; and
R is hydrogen or C_1–C_4 alkyl
or a nontoxic pharmaceutically acceptable salt thereof.

3,868,370
PROCESS FOR MAKING 4-BUTYROLACTONE
William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Feb. 9, 1973, Ser. No. 331,195
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **5 Claims**

1. The process for making 4-butyrolactone which comprises the step of heating 4-acetoxybutanoic acid in the presence of an acidic cyclization catalyst selected from the class consisting of nitric acid, phosphoric acid, sulfuric acid, polyphosphoric acid, phosphorous pentoxide, hydrogen chloride, toluene sulfonic acid, methane sulfonic acid, trichloroacetic acid, and finely divided alumina.

3,868,371
3-AMINO-1,2,4-BENZOTRIAZINE-1,4-DI-N-OXIDES AND PROCESSES FOR THEIR PREPARATION
Kurt Ley, Odenthal-Glofbusch; Florin Seng, Schildgen, and Karl George Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 24, 1973, Ser. No. 326,389
Claims priority, application Germany, Feb. 1, 1972, 2204574
Int. Cl. C07d *55/10*
U.S. Cl. 260—249.5 **31 Claims**

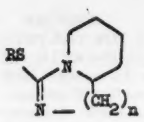
1. An isomeric mixture of a compound of the formula:



wherein R^2 is in the 6- or 7-position and is selected from the group consisting of bromo, fluoro, ethyl, dichloromethyl, dichlorofluoromethyl, pentafluoroethyl, carboxy, carbonamido or sulphonamido, the R^2 radicals in the mixture being identical.

3,868,372
ORGANOMERCAPTO-SUBSTITUTED POLYHYDRO IMIDAZO[1,5-A]PYRIDENES AND PYRIDE[1,2-C]PYRIMIDINES
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
Division of Ser. No. 161,302, July 9, 1971, Pat. No. 3,772,230, which is a division of Ser. No. 835,289, May 28, 1969, Pat. No. 3,631,046. This application Aug. 13, 1973, Ser. No. 387,751
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A **9 Claims**

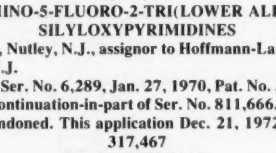
1. A compound of the formula:



wherein
R is either lower alkyl or benzyl; and
n is 1 or 2,
or an acid addition salt thereof.

3,868,373
4-AMINO-5-FLUORO-2-TRI(LOWER ALKYL) SILYLOXYPYRIMIDINES
Max Hoffer, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 6,289, Jan. 27, 1970, Pat. No. 3,721,664, which is a continuation-in-part of Ser. No. 811,666, March 28, 1969, abandoned. This application Dec. 21, 1972, Ser. No. 317,467
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 E **2 Claims**

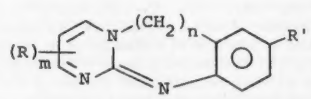
1. A compound of the formula



wherein R_1 is lower alkyl.

3,868,374
THERAPEUTIC COMPOUNDS AND INTERMEDIATES THEREFOR
Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed July 26, 1973, Ser. No. 382,804
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 F **3 Claims**

1. A compound of the formula



wherein *m* is 1 or 2; when *m* is 1, R occupies either the 4- or 5-positions of the starting 2-aminopyrimidine, but when R is halogen it occupies only position-5; when *m* is 2, the two R-substituents occupy the 4- and 5-positions of the starting 2-aminopyrimidine, but only one of the two R-substituents can be halogen and it must occupy the 5-position.

R is the same or different and is hydrogen, F, Cl, Br, alkyl of from 1 to 4 carbons, benzyl, phenyl, or monosubstituted phenyl wherein the substituent is F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, or trifluoromethyl; provided that when R is halogen, and m is 1, R occupies only the 5-position in the starting 2-aminopyrimidine with the proviso that R may not be adjacent tertiary alkyl;

R′ is hydrogen, F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, alkylthio of from 1 to 4 carbons, alkylsulfonyl wherein the alkyl radical has from 1 to 4 carbons, phenyl, phenyloxy, sulfamoyl, dialk-

ylamidosulfonyl wherein each alkyl radical has from 1 to 4 carbons, trifluoromethyl, mono-substituted phenyl or mono-substituted phenyloxy wherein the substituent is F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons or trifluoromethyl; *n* is 2 or 3,

and pharmaceutically acceptable acid addition salts thereof.

3,868,375

PROCESS FOR SEPARATING METHYLTEREPHTHALIC ACID AND 4-METHYLISOPHTHALIC ACID FROM MIXTURES OF THE TWO, AT EACH HIGHER CONCENTRATIONS

Gentaro Yamashita; Takeshi Fujii; Noritsugu Saiki, all of Iwakuni; Kiyoshi Nawata, and Takanori Shinoki, both of Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 4, 1971, Ser. No. 140,213

Claims priority, application Japan, May 7, 1970, 45-38831; May 7, 1970, 45-38832

Int. Cl. C07c *51/42*; C07d *51/64*

U.S. Cl. 260—268 R **38 Claims**

1. Process for separating and recovering salts of methylterephthalic acid at higher concentrations from mixtures of methylterephthalic acid and 4-methylisophthalic acid, which comprises dissolving a mixture of methylterephthalic acid and 4-methylisophthalic acid in water, in the form of the mixture of salts with at least one base selected from the group consisting of:

a. ammonia,

b. aliphatic, straight chain ω,ω'-diamines of an even number of carbon atoms within the range of 2 – 12,

c. diamines of the formula,

$$H_2N-(CH_2)_n-\phi-(CH_2)_n-NH_2$$

in which n is a positive integer of 1 – 3, and ϕ is p-phenylene group or p-cyclohexylene groups,

d. bis-(p-aminocyclohexyl) methane, and

e. piperazine,

to form an aqueous solution of the salts of said acid mixture, concentrating the solution to cause precipitation of the methylterephthalic acid salt or salt mixture composed mainly of methylterephthalic acid salt, and separating the so precipitated salt or salt mixture.

3,868,376

BIS N,N PIPERAZINE PHOSPHORAMIDES AND THEIR PREPARATION

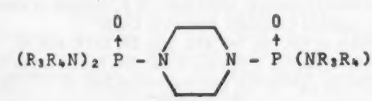
Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 278,850, Aug. 7, 1972, Pat. No. 3,795,613. This application Aug. 25, 1972, Ser. No. 284,012

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 K **6 Claims**

1. A compound having the formula:



wherein

R_3 is hydrogen or an alkyl having from 2 to 20 carbons; and

R_4 is an alkyl having from 2 to 20 carbons.

3,868,377

N-BENZHYDRYL-N′-p-HYDROXYBENZYL-PIPERAZINES AND PROCESSES FOR THEIR MANUFACTURE

Thomas Raabe, Heusenstamm; Josef Scholtholt, Frankfurt; Eckhard Schraven, Frankfurt-Fechenheim, and Rolf-Eberhard Nitz, Bergen-Enkheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

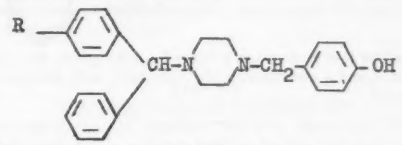
Filed May 29, 1973, Ser. No. 364,764

Claims priority, application Germany, June 2, 1972, 2226767; Mar. 12, 1973, 2312212

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BZ **3 Claims**

1. A compound of the formula



wherein R denotes a substituent selected from the group consisting of chlorine and hydrogen, or the non-toxic acid addition salts thereof

---

3,868,378

IMIDAZO [4,5-F] QUINOLIN-9-OLS

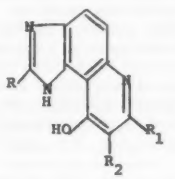
Claude F. Spencer, and Robert J. Alaimo, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed June 6, 1973, Ser. No. 367,499

Int. Cl. C07d *33/50*

U.S. Cl. 260—289 R **8 Claims**

1. A compound of the formula



wherein R is phenyl, 2-furyl, p-tolyl, or o-chlorophenyl; R_1 is methyl or phenyl; R_2 is hydrogen or methyl and R_1 and R_2 taken together supply the atoms necessary to form the cyclopentyl ring.

3,868,379

HETEROCYCLIC AMIDES OF 4-HYDROXY-2H-1-BENZOTHIOPYRAN-3-CARBOXYLIC ACID 1,1-DIOXIDE

Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 248,509, April 28, 1972, Pat. No. 3,769,292. This application June 21, 1973, Ser. No. 372,440The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **2 Claims**

1. 4-hydroxy-6-methyl-N-(2-pyridyl)-2H-1-benzothiopyran-3-carboxamide-1,1-dioxide.

2. 6-chloro-4-hydroxy-N-(2-pyridyl)-2H-1-benzothiopyran-3-carboxamide-1,1-dioxide.

3,868,380

DIPHENYLYL-AL KANOYLAMINOPYRIDINES AND SALTS THEREOF

Luigi Molteni, Corso di Porta Romana Nr. 69; Franco Tenconi, Via Palestrina Nr. 20, Monza, and Renato Tagliabue, Via V. Veneto 4, Bovisio, all of Milan, Italy

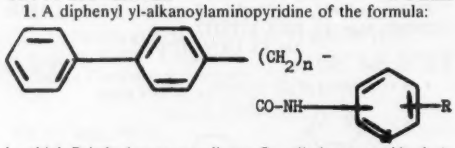
Filed May 22, 1973, Ser. No. 362,759

Claims priority, application Italy, May 23, 1972, 24732/72

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **6 Claims**

1. A diphenyl yl-alkanoylaminopyridine of the formula:



in which R is hydrogen or a linear C_{1-4} alkyl group and *n* is 1, 2 or 3, and a pharmaceutically acceptable acid addition salt thereof.

3,868,381

MANUFACTURE OF 1,1-DISUBSTITUTED-4,4 -BIPYRIDYLIUM

John Gerard Carey, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 126,903, March 22, 1971, abandoned. This application May 30, 1973, Ser. No. 365,250

Claims priority, application Great Britain, Apr. 3, 1970, 15960/70

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **8 Claims**

1. A process for the manufacture of a 1,1'-disubstituted-4,4'-bipyridylium salt wherein each of the substituents is selected from the group consisting of lower alkyl, carbamido lower alkyl and hydroxy lower alkyl groups containing up to 10 carbon atoms which consists essentially of reacting the corresponding N-substituted pyridinium salt with hydrogen cyanide in a medium consisting essentially of substantially anhydrous liquid ammonia under a non-oxidising atmosphere at a temperature of from −70°C. to no more than 150°C, and subsequently oxidising the resulting interaction product by means of an oxidising agent having a redox potential in water more positive than −0.50 volt as compared with the saturated calomel electrode.

3,868,382

THIAZOLIDINE DERIVATIVES

Raymond Giraudon, Lesigny, Seine-et-Marne, France, assignor to Rhone-Poulenc S.A., Paris, France

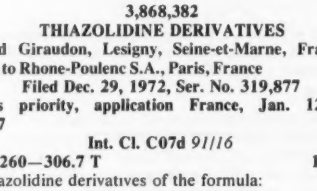
Filed Dec. 29, 1972, Ser. No. 319,877

Claims priority, application France, Jan. 12, 1972, 72.00947

Int. Cl. C07d *91/16*

U.S. Cl. 260—306.7 T **14 Claims**

1. Thiazolidine derivatives of the formula:



wherein R represents alkyl of 1 to 4 carbon atoms, R_1 represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl, and R_2 represents alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms substituted by halogen, phenyl or phenyl carrying one, two or three substituents selected from the class consisting of halogen and alkyl, alkoxy and alkanoylamino radicals, or a naphthyl radical, the said alkyl, alkoxy and alkanoylamino radicals having 1 through 4 carbon atoms.

3,868,383

PROCESS FOR PREPARING 5-(α-CYANOBENZYLIDENE) OXAZOLIDINE-2, 4-DIONES

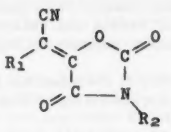
Ronald E. Hackler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 23, 1973, Ser. No. 353,928

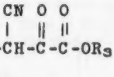
Int. Cl. C07d *85/34*

U.S. Cl. 260—307 B **8 Claims**

1. A process for the preparation of 5-(α-cyanobenzylidene)oxazolidine-2,4-diones of the formula,



which process comprises the step of reacting a substituted cyanopyruvic acid ester of the formula,



with an isocyanate of the formula,

R_2NCO

in a solvent or solvent mixture having no active hydrogen atoms; wherein R_1 is a monovalent organic group selected from the group consisting of phenyl, p-chlorophenyl, and p-fluorophenyl; R_2 is a monovalent organic group selected from the group consisting of phenyl, p-chlorophenyl, 1-naphthyl, and C_1–C_{18} alkyl, with the limitations that when R_2 is naphthyl, R_1 is phenyl, and when R_1 is p-fluorophenyl, R_2 is C_1–C_{18} alkyl; and R_3 is monovalent C_1–C_6 alkyl.

3,868,384

PERFLUOROALKYL DERIVATIVES

Stephen S. Szinai, Workingham, Berkshire, England; George Crank, Kensington, New South Wales, Australia, and David R. K. Harding, London, Ontario, Canada, assignors to Lilly Industries, Ltd., London, England

Division of Ser. No. 84,462, Oct. 27, 1970, abandoned. This application Dec. 19, 1972, Ser. No. 316,616

Claims priority, application Great Britain, Oct. 28, 1969, 52837/69

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F **1 Claim**

1. 2-Trifluoromethyl oxazolidine.

3,868,385

PREPARATION OF 2-CYANO-1-SUBSTITUTED-5-NITROIMIDAZOLES

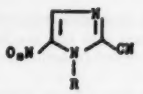
William Henry Gastrock, Hightstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 167,492, July 29, 1971, Pat. No. 3,770,760, which is a division of Ser. No. 864,861, Oct. 8, 1969, Pat. No. 3,634,447. This application July 12, 1973, Ser. No. 378,465

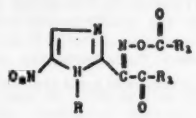
Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **1 Claim**

1. A method for the preparation of a compound of the formula:



where R is a member selected from the group consisting of loweralkyl, loweralkanoyloxyloweralkyl and aroyloxyloweralkyl where aroyl is selected from the group consisting of benzoyl, monohalobenzoyl, dihalobenzoyl, loweralkylbenzoyl, dilowerallylbenzoyl, 4-nitrobenzoyl, methoxybenzoyl and naphthoyl, comprising treating a compound of the formula:



where R is as described above and R_1 is phenyl, monohalophenyl, dihalophenyl, loweralkylphenyl, dilowerallylphenyl, 4-nitrophenyl, methoxyphenyl or naphthyl, with from about 0.5 to 1.0 mole equivalent of a strong base selected from the group consisting of alkali metal hydroxides, alkali metal cyanides and alkali metal alkoxides at a temperature between about 0°C. and 100°C. in the presence of an alkanol of 1 to 6 carbon atoms and recovering the thus formed product from the reaction mixture.

3,868,386

PROCESS FOR THE PREPARATION OF 4-CARBOXAMIDO-5-CYANO-2-IMIDAZOLONE

Robert A. Sanchez, 867 Riqueza Ave., Encinitas, Calif. 92024, and William D. Fuller, 4126 Seri St., San Diego, Calif. 92117

Filed Mar. 14, 1973, Ser. No. 341,227
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **6 Claims**

1. A process for the production of 4-carboxamido-5-cyano-2-imidazolone which comprises the steps of:

reacting a water-soluble bicarbonate salt with a member of the group selected from hydrogen cyanide and diaminomaleonitrile, in aqueous alkaline media having a pH of between about 7 to about 9 and a temperature of between about 10°-40°C to form 4-carboxamido-5-cyano-2-imidazolone.

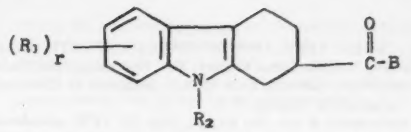
3,868,387

1,2,3,4-TETRAHYDROCARBAZOLE-2-CARBOXYLIC ACIDS AND THEIR DERIVATIVES

Leo Berger, Montclair, and Alfred John Corraz, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 133,738, April 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 40,443, May 25, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,764
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 **15 Claims**

1. A compound of the formula



wherein *r* is 1 or 2; R_1 is halogen or lower alkyl of 1 to 7 carbon atoms; R_2 is hydrogen or lower alkyl; and B is selected from the group consisting of hydroxy, lower alkoxy, amino-lower alkoxy, monolower alkylamino-lower alkoxy and di-lower alkylamino-lower alkoxy,

its enantiomers, or when B is hydroxy, salts thereof with pharmaceutically acceptable bases, and when B is amino-lower alkoxy, mono-lower alkylamino-lower alkoxy or di-lower alkylamino-lower alkoxy, addition salts thereof with pharmaceutically acceptable acids.

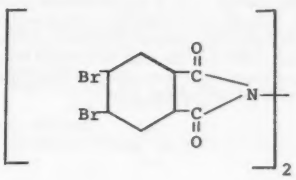
3,868,388

FLAME-RETARDANT COMPOSITION

Anderson Dotson, Jr., Somerset, and F. T. Wadsworth, Trenton, both of N.J., assignors to Cities Service Company, New York, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,507
Int. Cl. C07d *27/52*
U.S. Cl. 260—326 N **2 Claims**

1. The compound corresponding to the formula:



3,868,389

METHOD FOR MAKING N-SUBSTITUTED NITROPHTHALIMIDES

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company

Filed June 22, 1973, Ser. No. 372,744
Int. Cl. C07d *27/00, 27/52*
U.S. Cl. 260—326 N **7 Claims**

1. A method for making N-substituted nitrophthalimides which comprises

1. effecting reaction between a nitrophthalic anhydride and organic isocyanate in a non-polar organic solvent in the presence of an effective amount of an alkali carbonate, and
2. recovering the N-substituted nitrophthalimide from the mixture of (1).

3,868,390

SPIRO DIBENZOCYCLOHEPTENE ISOINDOLINE

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 188,860, Oct. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 122,092, March 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 54,597, July 13, 1970, abandoned. This application Jan. 19, 1973, Ser. No. 325,076
Int. Cl. C07d *27/48*
U.S. Cl. 260—326.1 **2 Claims**

1. Spiro[10,11-dihydro-5H-dibenzo[a,d]cycloheptene-5,1'-N-methyl isoindoline].

3,868,391

α-(CYCLIC TERT, AMINOPHENYL)-ALIPHATIC ACIDS

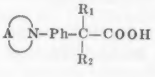
Richard William James Carney, New Providence, and George deStevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 40,436, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 8,406, Feb. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 856,154, Sept. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 843,244, July 18, 1969, Pat. No. 3,641,040, which is a continuation-in-part of Ser. No. 808,343, March 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 790,863, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, Sept. 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, March 27, 1968, abandoned. This application Dec. 26, 1972, Ser. No. 318,158

Int. Cl. C07d *27/14*

U.S. Cl. 260—326.41 **9 Claims**

1. An α-(cyclic tert. aminophenyl)-aliphatic acid of the formula



in which R_1 is hydrogen or lower alkyl, R_2 is hydrogen, lower alkyl, lower alkenyl, 3 to 7 ring-membered cycloalkyl, cycloalkenyl, cycloalkyl-lower alkyl or cycloalkenyl-lower alkyl, Ph is unsubstituted phenylene or phenylene substituted by one or two halogen atoms or one member selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, nitro, amino or di-lower alkylamino, and

is monocyclic 5 to 7 ring membered 2- or 3-alkenyleneimino, or a lower alkyl ester, the amide, a mono- or di-lower alkylamide, the N-oxide, or a therapeutically acceptable alkali metal or alkaline earth metal salt or acid addition salt thereof in which compounds "lower" defines such groups with up to 4 carbon atoms.

3,868,392

METHOD AND APPARATUS FOR THE PRODUCTION OF PEROXIDE DERIVATIVES OF HIGH PURITY OZONIDES, BY OZONIZATION OF THE CORRESPONDING OLEFINS, AND SUBSEQUENT TREATMENTS

Francesco Siclari, Barlassina, and Pietro Paolo Rossi, Garlasco, both of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

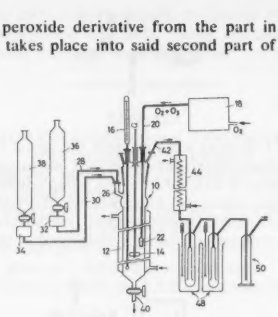
Filed Feb. 17, 1972, Ser. No. 227,203

Claims priority, application Italy, Feb. 19, 1971, 20802/71

Int. Cl. C07c *75/00*

U.S. Cl. 260—340.3 **13 Claims**

1. A method for the production of peroxide derivatives of ozonides, by ozonization of the corresponding olefins, comprising feeding into a confined environment defining a space having a first part and a second part, a composite solution comprising the olefin, a nonpolar solvent which is inert with respect to the olefin, and a polar solvent, capable of reactively dissolving the olefin when ozonized and of forming a peroxide derivative therewith, and simultaneously supplying a gas including ozone into said environment and causing such gas to flow solely through the first part of said space to promote ozonization of the olefin and form an ozonide which, while being reactively dissolved by said polar solvent, forms a heavy phase containing said peroxide derivative, and effecting transfer of said peroxide derivative from the part in which the ozonization takes place into said second part of said space



from which it is withdrawn to avoid superoxidation and polymerization.

3,868,393

MANUFACTURE OF CARBOXYLIC ACIDS OF THEIR ANHYDRIDES

Peter Reuter, Bad Duerkheim, and Wilhelm Friedrichsen, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Apr. 14, 1972, Ser. No. 244,228

Claims priority, application Germany, Apr. 19, 1971, 2118871

Int. Cl. C07c *63/18, 57/14*

U.S. Cl. 260—346.4 **10 Claims**

1. In a process for the manufacture of a carboxylic acid or a carboxylic acid anhydride by the oxidation of an aromatic or an unsaturated aliphatic hydrocarbon with oxygen or air in the presence of a vanadium-pentoxide fixedbed catalyst at a temperature of from 350° to 600°C. in the gas phase in a tube reactor containing the fixed-bed catalyst, the improvement which comprises:

carrying out the gas phase oxidation in contact with a catalytic coating which covers at least one-half up to not more than two-thirds of the total area of the inside wall of the tube to a thickness of from 0.01 to 0.5 mm, so that from one-third to one-half of the total length of the tube, measured from the gas inlet end, is free of siad catalytic coating on the internal surface of the tube, said coating consisting essentially of at least one oxide selected from the class consisting of titanium dioxide and zirconium dioxide, in admixture with up to 50 percent by weight (based on the mixture) of vanadium pentoxide.

3,868,394

METHOD OF PRODUCING HYDROCHLORIDE OF ASPARTIC ANHYDRIDE

Fumihide Tamura; Yoichi Ozawa, and Asao Nakamura, all of Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,741

Claims priority, application Japan, Mar. 30, 1970, 45-26699

Int. Cl. C07c *57/02*

U.S. Cl. 260—346.8 R **4 Claims**

1. A method of preparing the hydrochloride of aspartic anhydride having the formula $C_4H_6NO_3Cl$ which comprises:

a. suspending aspartic acid in an amount of a liquid organic solvent medium insufficient to dissolve said aspartic acid, said medium essentially consisting of an ether, a hydrocarbon, a chlorinated hydrocarbon, a nitrile, or an ester of a carboxylic acid;

b. introducing phosgene into the suspension so formed at a temperature between room temperature and 60°C until a clear solution is formed;

c. precipitating said hydrochloride in crystalline form from said solution; and
d. separating the crystalline hydrochloride from said solution,
1. said medium being inert to said aspartic acid, to said phosgene, and to said hydrochloride at said temperature, and being capable of dissolving said hydrochloride,
2. said medium prior to said introducing being free of acids stronger than aspartic acid.

3,868,395

PRODUCTION OF PURE 1-NITROANTHRAQUINONE

Karl-Heinz Bantel, Ludwigshafen, and Heinz Eilingsfeld, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed June 25, 1973, Ser. No. 373,131
Claims priority, application Germany, July 1, 1972, 2232446
Int. Cl. C09b *1/00*
U.S. Cl. 260—369 13 Claims

1. A process for the production of pure 1-nitroanthraquinone from a crude mixture of mono- and dinitroanthraquinones which comprises treating said crude mixture in an aprotic organic solvent with an aliphatic, cycloaliphatic, araliphatic or saturated heterocyclic primary or secondary amine or mixtures thereof, using said amine or amine mixture in an amount of from 0.7 to 4 moles per mole of dinitro compounds in the crude mixture and carrying out the treatment at a temperature of about 40°C. to 250°C.

3,868,396

PREPARATION OF 25-HYDROXYCHOLESTEROL AND ESTERS THEREOF

Nobuo Ikekawa; Masuo Morisaki, and Julieta Rubio Lightbourn, all of Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1974, Ser. No. 441,830
Claims priority, application Japan, Feb. 16, 1973, 48-18305
Int. Cl. C07c *169/60*, *167/20*
U.S. Cl. 260—397.2 6 Claims

1. A process for the preparation of 25-hydroxycholesterol and 3-esters thereof, comprising reacting desmosterol or 3-ester thereof with a mercuric salt of organic or inorganic acid and reducing the resulting reaction product with an alkali metal borohydride.

3,868,397

PROCESS FOR PREPARATION OF CHLORENDIC ANHYDRIDE

Jay A. Cull, Williamsville, and Walter M. Zimberg, Tonawanda, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 1, 1972, Ser. No. 249,036
Int. Cl. C07c *61/28*, *61/26*
U.S. Cl. 260—346.6 6 Claims

1. The process of preparing chlorendic anhydride which comprises:
a. reacting a mixture of ultra-high purity hexachlorocyclopentadiene containing at least about 98 percent by weight of hexachlorocyclopentadiene and maleic anhydride, the latter being present in an amount which is about 1 to about 10 mol percent excess, said mixture containing less than about 10 percent by weight of liquid chlorinated benzene boiling between about 110° and about 180° centigrade,
b. heating said mixture at a temperature of from about 110° to about 180° centigrade until substantially complete reaction has taken place,
c. drying the reaction mixture at an elevated temperature and under subatmospheric pressure, and
d. separating the resultant chlorendic anhydride product in a form substantially free from unreacted hexachlorocyclopentadiene and liquid chlorinated benzene.

3,868,398

ORGANO METAL COMPLEXES

Wolfram R. Kroll, Somerville, and Robert B. Long, Atlantic Highlands, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 21, 1970, Ser. No. 65,957
Int. Cl. C07f *1/08*
U.S. Cl. 260—438.1 12 Claims

1. A complex cuprous organometallic composition having the general formula $CuMRX_3 \cdot n(L)$ wherein M is selected from the group consisting of aluminum and boron atoms, X is selected from the group consisting of chlorine, bromine and fluorine atoms, R is an organic radical selected from the group consisting of a C_1 to C_4 alkyl radical, a phenyl radical, a C_7 to C_{10} alkylaryl radical and halogen substituted C_1 to C_4 alkyl, phenyl and C_7 to C_{10} alkylaryl radicals, n varies from about 0.3 to 2.0 and L is a complexible ligand, said ligand selected from the group consisting of carbon monoxide, C_2 to C_{20} open chain monoolefins, C_5 to C_{10} cyclic monoolefins and C_2 to C_6 acetylenes.

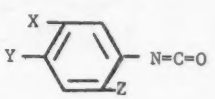
3,868,399

CHLORINATED ALKOXYPHENYLISOCYANATES

Joseph V. Karabinos, Orange, Conn., assignor to Carbolabs, Inc., Bethany, Conn.

Filed Dec. 20, 1972, Ser. No. 317,006
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 AR 3 Claims

1. A composition of matter having the following formula



wherein X is selected from the group consisting of chlorine and hydrogen, Y is selected from the group consisting of chlorine and hydrogen and Z is methoxy, provided that when X is hydrogen Y must be chlorine and when X is chlorine Y must be hydrogen.

3,868,400

PROCESS FOR VAPOR PHASE AMMOXIDATION

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed May 4, 1973, Ser. No. 357,145
Int. Cl. C07c *121/02*
U.S. Cl. 260—464 11 Claims

1. In a process for the preparation of nitriles by ammoxidation the improvement which comprises passing as a reactant stream a mixture of vapors comprised of (1) an organic reactant consisting essentially of a lower alkyl-substituted aromatic hydrocarbon selected from the group of benzene, naphthalene and anthracene, a lower alkyl-substituted alicyclic hydrocarbon containing from about five to about ten carbon atoms in the ring, a lower alkyl-substituted monohydroxy benzene or monohydroxy naphthalene, (2) ammonia, (3) oxygen, and (4) carbon monoxide over an ammoxidation catalyst at a temperature of about 300° to about 600°C, the mole ratio of reactants per mole of hydrocarbon or monohydroxy compound based on one alkyl group being converted to a nitrile group, being as follows: ammonia, 1.5:1 to 10:1; oxygen, 1.5:1 to 10:1, and carbon monoxide, 0.5:1 to 15:1,

whereby burn loss of ammonia and organic reactant is reduced and the conversion to nitrile is significantly increased.

3,868,401
ASYMMETRIC SYNTHESIS OF ALKYL CHRYSANTHEMATES

Tadatoshi Aratani, and Shuzo Nakamura, both of Takatsuki, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Aug. 1, 1972, Ser. No. 276,946
Claims priority, application Japan, Aug. 16, 1971, 46-62411
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 H 14 Claims

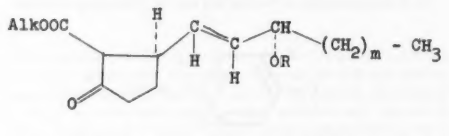
1. A process for preparing an optically active alkyl chrysanthemate which comprises reacting 2,5-dimethyl-2,4-hexadiene with an alkyl diazoacetate in the presence of a copper catalyst coordinated with a chiral ligand capable of complexing with copper.

3,868,402
NOVEL CYCLOPENTANONE-2-CARBOXYLATES

Jacques Martel, Bondy, and Edmond Toromanoff, Paris, both of France, assignors to Roussel UCLAF, Paris, France

Division of Ser. No. 138,274, April 28, 1971, Pat. No. 3,736,319. This application Nov. 15, 1972, Ser. No. 306,796
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 K 4 Claims

1. A 3-(3′-OR-trans 1′-alkenyl)cyclopentanone2-carboxylate of the formula



wherein Alk is alkyl of 1 to 7 carbon atoms, R is hydrogen and *m* is 3, 4 or 5.

3,868,403
PROCESS FOR THE PRODUCTION OF HALOGEN-SUBSTITUTED AROMATIC AMINES

Hans-Joachim Becker; Helmut Dierichs, and Walter Schmidt, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 19, 1971, Ser. No. 163,679
Claims priority, application Germany, July 22, 1970, 2036313
Int. Cl. C07c *101/54*
U.S. Cl. 260—471 R 7 Claims

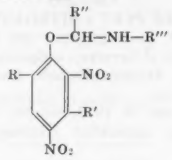
1. In a process for preparing halogen substituted aromatic amines from the corresponding nitro compounds by hydrogen reduction in the presence of a noble metal catalyst the improvement which consists essentially of carrying out said reduction at a pH of from 7–12 in the presence of a noble metal catalyst having a metal content of from 0.1 to 5% by weight and a predetermined level of activity through having been previously used at least once in a catalytic hydrogenation reaction, said previously used catalyst producing said halogen substituted aromatic amines in substantially quantitative yield with substantially no dehalogenation and the formation of substantially no secondary products as compared to the same fresh noble metal catalyst.

3,868,404
SUBSTITUTED METHYL ETHERS OF 2-BRANCHED-ALKYL-4,6-DINITROPHENOLS

Gerhard Zumach; Ingeborg Hammann, both of Cologne; Gunter Unterstenhofer, Opladen, and Richard Wegler, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 31,784, April 24, 1970, Pat. No. 3,683,031. This application Jan. 14, 1972, Ser. No. 217,932
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 3 Claims

1. Substituted methyl ethers of 2-branched alkyl 4,6-dinitrophenol of the formula:



in which

R represents a branched alkyl radical with 3-12 carbon atoms,

R′ represents hydrogen or methyl,

R″ represents hydrogen, or an alkyl, chloroalkyl or bromoalkyl radical containing up to 3 carbon atoms, and

R‴ represents an optionally chloro- or fluoro-substituted acetyl radical, an optionally chloro-, fluoro- or nitro-substituted benzoyl radical, an optionally chloro- or fluoro-substituted alkyl oxycarbonyl radical, or a chloro-, fluoro-, alkyl-, chloroalkyl- or fluoroalkyl-substituted phenyl oxycarbonyl residue wherein the alkyl radical consists of 1 to 12 carbon atoms.

3,868,405
NAPHTHYLENE DERIVATIVES

Edward George Brain, Leigh; John Christopher Hanson, Newdigate, and Minoo Dossabhoy Mehta, Wimbledon, all of England, assignors to Beecham Group Limited, Brentford, Middlesex, England

Continuation of Ser. No. 639,023, May 17, 1967, abandoned. This application July 1, 1971, Ser. No. 159,037
Int. Cl. C07c *69/88*
U.S. Cl. 260—473 F 3 Claims

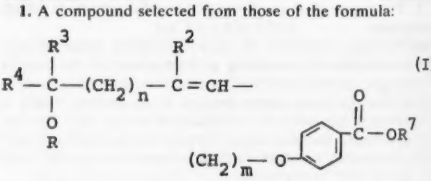
2. 3-(6′-Methoxy-2′-naphthyl)-2-methylcyclopentanone-2-acetic acid or its methyl ester.

3,868,406
P-ALKENYLOXYBENZOIC ACID ESTERS USEFUL FOR THE CONTROL OF INSECTS

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 60,636, Aug. 3, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 311,572
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 R 8 Claims

1. A compound selected from those of the formula:



(I)

wherein,

R is hydrogen or lower alkyl of one to three carbon atoms;

each of R^2, R^3 and R^4 is lower alkyl;

R^7 is lower alkyl;
m is one or two; and
m is one or two; and
n is three or four.

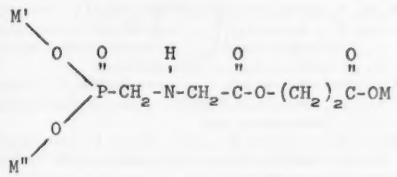
3,868,407

CARBOXYALKYL ESTERS OF N-PHOSPHONOMETHYL GLYCINE

John E. Franz, Crestwood, and Hans L. Nufer, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1973, Ser. No. 417,858
Int. Cl. C07c *101/12*
U.S. Cl. 260—482 R **3 Claims**

1. A compound of the formula



wherein N is hydrogen, alkali metal, alkaline earth metal, ammonium or primary, secondary or tertiary amine, and M'' are hydrogen, alkali metal, alkaline earth metal, ammonium or primary, secondary or tertiary amine.

3,868,408

ETHYLENICALLY UNSATURATED DICARBOXYLIC ACID ESTERS OF α, α-DIHYDROPERFLUORO ALCOHOLS

Dewey George Holland, Allentown, and Burton David Beitchman, Springfield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sept. 27, 1971, Ser. No. 184,264
Int. Cl. C07c *69/52, 69/60*
U.S. Cl. 260—485 F **10 Claims**

1. A diester having the formula:

$$[R_f CH_2]_2R$$

where R_f is $C_nF_{2n+1}[C_6F_{10}]$;
C_6F_{10} is a perfluorocyclohexane ring
where *n* is an integer of from 0 to 4;
and where R is
$[-O_2CCH{:}CHCO_2-]$, $[-O_2CCH{:}C(CH_3)CO_2-]$ or $[-O_2CC(CH_2)CH_2CO_2-]$.

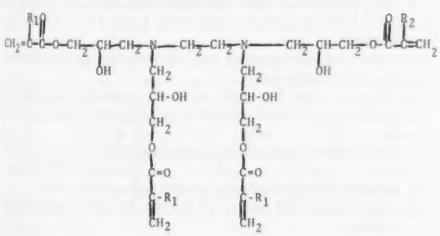
3,868,409

ACRYLIC ACID ESTERS

Kazuo Manaka, Broadview, Ill., assignor to Broadview Chemical Corporation, Broadview, Ill.

Filed Sept. 24, 1969, Ser. No. 860,786
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **3 Claims**

1. A monomer characterized by the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl.

3,868,410

CONVERSION OF OLIGOMERIC ACRYLATES TO ACRYLATE MONOMERS

Theodore Horlenko; Gene J. Fisher, and Adolfo Aguilo, all of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,532
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **14 Claims**

1. In an esterification process wherein acrylic acid is esterified with an alkanol of from 1 to about 10 carbon atoms to form an ester of acrylic acid with said alkanol, said process being characterized by the formation of oligomeric by-products comprising at least one member of the group consisting of:

I $CH_2{=}CH{-}\overset{O}{\overset{\|}{C}}{-}O{-}CH_2{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}OH,$

II $CH_2{=}CH{-}\overset{O}{\overset{\|}{C}}{-}O{-}CH_2{-}$

$CH_2{-}\overset{O}{\overset{\|}{C}}{-}O{-}CH_2{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}OH,$

III. Esters of (I) and of (II) with said alkanol, and

IV $RO{-}[CH_2{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}O]_n{-}R$

wherein R is an alkyl group corresponding to said alkanol and n is an integer from 1 to 10, the improvement which comprises:

converting said oligomeric by-products to a product comprising at least one member of the monomer group consisting of acrylic acid, said alkanol, and the monomeric acrylate of said alkanol by a method which comprises heating said oligomeric by-products in a liquid phase containing an effective amount of an inhibitor against vinyl-type polymerization, to a temperature of at least about 180°C.

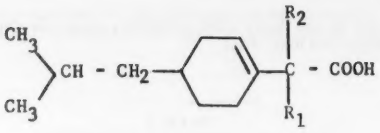
3,868,411

ISOBUTYL CYCLOHEXENYL COMPOUNDS ALPHA (P-ISOBUTYL-CYCLOHEXENYL) ALKANOIC ACIDS

Michel Vincent, Bagneux; Georges Remond, Paris, and Pierre Desnoyers, Fontenay-Aux, Roses, all of France, assignors to Societe en nom collectif Science Union Et Cie, Societe Francaise De Recherche, Medicale-Suresnes, France

Filed July 15, 1970, Ser. No. 55,292
Claims priority, application Great Britain, July 22, 1969, 36734/69
Int. Cl. C07c *61/22*
U.S. Cl. 260—514 L **7 Claims**

1. A compound selected from the group consisting of:
A. isobutyl cyclohexenyl compounds of the formula:



wherein:

R_1 is selected from the group consisting of hydrogen and lower-alkyl of 1 to 5 carbon atoms, inclusive;

R_2 is lower-alkyl of 1–5 carbon atoms, inclusive; and

(B) physiologically tolerable salts with bases of alkali or alkaline earth metals.

3,868,412

9,15-DIOXO-5-CIS-PROSTENOIC ACID

Charles Hsu, Skokie; James Jiu, and Seth Setsuo Mizuba, both of Morton Grove, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 295,209, Oct. 5, 1972, Pat. No. 3,788,947. This application June 25, 1973, Ser. No. 373,427

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D **1 Claim**

1. 9,15-Dioxo-5-cis-prostenoic acid.

3,868,413

2-(4-HYDROXY-1-ALKYNYL)-5-OXOCYCLOPENT-1-ENEALKANOIC ACIDS, 3-HYDROXY CONGENERS CORRESPONDING AND DERIVATIVES THEREOF

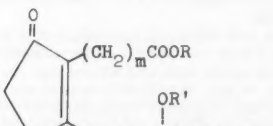
Raphael Pappo, Skokie, and Paul W. Collins, Deerfield, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 43,577, June 4, 1970, Pat. No. 3,770,776. This application Nov. 2, 1973, Ser. No. 412,428

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—514 D **9 Claims**

1. A compound of the formula



wherein X is a methylene, hydroxymethylene or (lower alkanoyl)oxymethylene radical, R is hydrogen or a lower alkyl radical, R′ is hydrogen or a lower alkanoyl radical, R″ is hydrogen or a lower alkyl radical and *m* is an integer greater than 5 and less than 8.

3,868,414

TETRAHYDROFLUORENE CARBOXYLIC ACIDS AND RELATED COMPOUNDS

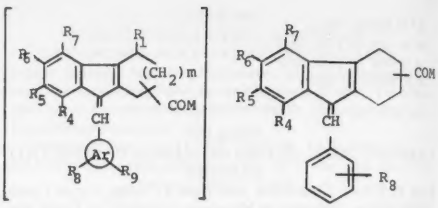
Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 22, 1973, Ser. No. 325,298

Int. Cl. C07c *63/44, 69/76, 147/00*

U.S. Cl. 260—515 A **9 Claims**

1. A compound of the formula:



where

R_4, R_5, R_6 and R_7 are each hydrogen, halo, C_{1-5} loweralkyl, halo C_{1-5} loweralkyl, C_{1-5} loweralkoxy, cyano, amino, C_{1-5} loweralkylamino, C_{1-5} diloweralkylamino, hydroxy, C_{2-5} loweralkenyloxy or trifluoromethyl;

R_8 maybe hydrogen, halo, C_{1-5} loweralkylthio, C_{1-5} loweralkyl, C_{1-5} loweralkylsulfonyl, C_{1-5} loweralkylsulfinyl, nitro or C_{1-5} loweralkoxy; and

M is hydroxy, hydroxy C_{1-5} lower alkoxy, C_{1-5} loweralkoxy, C_{1-5} loweralkoxyalkoxy, C_{1-5} loweralkoxyalkoxyalkoxy, benzyloxy or phenoxy.

5. The compound of claim **4** wherein

R_6 is fluoro;

R_4, R_5, R_7 and R_9 are each hydrogen; and

R_8 is methylsulfinyl.

3,868,415

PREPARATION OF 5-FLUORO-2-METHYL-1-(P-METHYLSULFINYLBENZYLIDENE)-INDENYL-3-ACETIC ACID

Howard Jones, Holmdel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 3, 1973, Ser. No. 402,941

Int. Cl. C07c *147/00*

U.S. Cl. 260—515 A **4 Claims**

1. A process for preparing 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acid which comprises the steps of:

a. reacting 5-fluoro-2-methyl-indane-1,3-dione with a malonic acid ester in the presence of a strong base to form an arylidene malonic acid diester and hydrolyzing said diester to form the diacid;

b. decarboxylating said arylidene malonic acid diacid to form 5-fluoro-2-methyl-ind-2-ene-1-one-3-acetic acid by heating;

c. esterifying said 3-acetic acid to form the corresponding 3-acetate compound;

d. reacting said 3-acetate with a p-methylsulfinylbenzyl magnesium halide followed by dehydration using an acid or with a p-methylsulfinylbenzylidenetriphenylphosphorane to form an ester of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indenyl-3-acetate; and

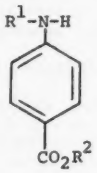
e. hydrolyzing said indenyl-3-acetate to form the desired product.

3,868,416
HYPOLIPIDEMIC 4-(MONOALKYLAMINO)BENZOIC ACID DERIVATIVES

Jay Donald Albright, Nanuet; Stephen Joseph Riggi, Suffern, and Robert Gordon Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 1, 1973, Ser. No. 402,212
Int. Cl. C07c *101/60*
U.S. Cl. 260—518 R 7 Claims

1. 4-(Monoalkylamino)benzoic acid derivatives of the formula:



wherein R^1 is an unbranched or branched alkyl group, C_nH_{2n+1} wherein n is 8 to 19; and R^2 is hydrogen, lower alkyl, benzyl, dilower alkylaminoethyl, or lower alkoxyethyl; and the pharmaceutically acceptable salts thereof.

3,868,417
SEPARATION OF ACRYLIC ACID FROM THE REACTION GASES FROM PROPYLENE OR ACROLEIN OXIDATION

Gerd Duembgen, Dannstadt; Heinz Engelbach, Limburgerhof; Walter Frey, Mannheim; Richard Krabetz, Kirchheim; Ulrich Lebert, Ludwigshafen; Fritz Triessen, Ludwigshafen, and Carl-Heinz Willersinn, Ludwigshafen, all of Germany, assignors to Badische Anilin Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

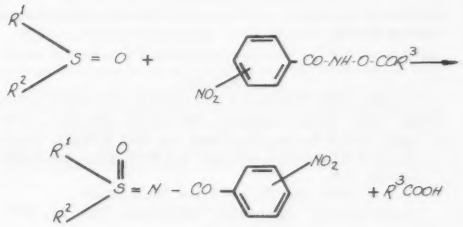
Filed Aug. 23, 1973, Ser. No. 391,012
Claims priority, application Germany, Aug. 24, 1972, 2241714
Int. Cl. C07c *57/04*
U.S. Cl. 260—526 N 3 Claims

1. A process for the separation of acrylic acid from reaction gases from the oxidation of propylene or acrolein by countercurrent absorption with carboxylic esters of melting point less than 30°C and boiling point under normal pressure of from 160° to 360°C at temperatures of 50° to 80°C and pressures of 0.5 to 5 bars, from 10 to 20 parts by weight of carboxylic ester being used per part by weight of acrylic acid in the reaction gas, wherein the dissolved acetic acid and the dissolved water are substantially completely expelled from the resulting absorption solution at 90° to 140°C and 0.5 to 5 bars by means of inert gases, the loaded inert gases are passed to the countercurrent absorption for the recovery of the acrylic acid contained in them and the acrylic acid is distilled off from the water-free and acetic acid-free carboxylic ester solution at 0.04 to 0.1 bar.

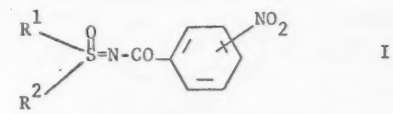
3,868,418
NOVEL N-(ORTHO- AND PARA-NITROBENZOYL)-SULFOXIMINE INTERMEDIATES AND PROCESS FOR THEIR PRODUCTION

Wolfgang Dieter Herrmann, Denzlingen; Peter Johannes Stoss, Wildtal, and Gerhard Saltzinger, Denzlingen, all of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 13, 1973, Ser. No. 351,112
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 S 7 Claims



1. A compound of the formula I:



I

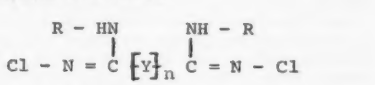
wherein R^1 and R^2 each represent an alkyl radical having from 1 to 3 carbon atoms, a phenyl radical or a para-methoxy phenyl radical.

3,868,419
BIOCIDAL N-CHLORO-AMIDINES

Jean-Claude Petitpierre, Kaiseraugst, and Claus Weis, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 279,409, Aug. 10, 1972, Pat. No. 3,822,304. This application Apr. 25, 1974, Ser. No. 464,271
Claims priority, application Switzerland, Sept. 3, 1971, 12945/71; July 11, 1972, 10361/72
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 7 Claims

1. A compound of the formula



wherein R represents hydrogen, alkyl of from 1 to 4 carbon atoms or cycloalkyl of from 3 to 6 carbon atoms; Y represents $-CCl_2-$; and n is 0 or 1.

3,868,420
NUCLEAR ALKYLATION OF ANILINS

Frank Evans, Pratteln, Basel-Land; Walter Frey, Muttenz, Basel-Land; Joerg Staeheli, Basel, and Istvan Toth, Bottmingen, Basel-land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 14, 1972, Ser. No. 280,353

Claims priority, application Switzerland, Aug. 20, 1971, 12299/71; Oct. 14, 1971, 15119/71

Int. Cl. C07c *39/06*

U.S. Cl. 260—578 **8 Claims**

1. A process for the production of phenylamine alkylated in the ortho and/or para positions by alkyl groups of 1 to 4 carbon atoms and unsubstituted on the amino group, which comprises the step of reacting a phenylamine having an ortho and/or para position available for alkylation with an alkanol of 1 to 4 carbon atoms in the vapour phase and with heating to a temperature of from 350° to 450°C, in the presence of aluminum oxide/molybdenum oxide mixed catalyst in which the amount of molybdenum oxide is approximately from 0.01 to 20 percent by weight, which catalyst has a minimum surface area of 50m²/g.

3,868,421
9-(3 OXO-1-PROPENYL)-9,10-ETHANO-ANTHRACENES

Dieter Beck, Basel; Raymond Bernasconi, Oberwil, Basel-Land; Karl Schenker, Binningen, and Max Wilhelm, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

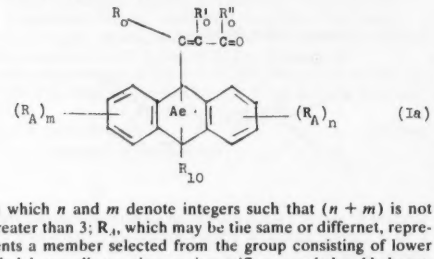
Filed Feb. 11, 1972, Ser. No. 225,614

Claims priority, application Switzerland, Feb. 23, 1971, 2576/71; Jan. 17, 1972, 667/72

Int. Cl. C07c *47/52, 49/76, 49/80*

U.S. Cl. 260—599 **5 Claims**

1. A compound of the formula



(Ia)

in which n and m denote integers such that $(n + m)$ is not greater than 3; R_A, which may be the same or differnet, represents a member selected from the group consisting of lower alkyl, lower alkoxy, nitro, amino, trifluoromethyl and halogen, R_{10} denotes hydrogen, halogen or lower alkyl, the symbols, R_o, R_o' and R_o'' each are hydrogen or one of them is methyl, and Ae denotes 1,2-ethylene which is substituted in the 1- or 2-position by lower alkyl, or is unsubstituted.

3,868,422
MULTISTAGE HYDROFORMYLATION PROCESS

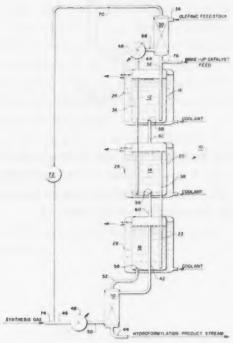
Wallace F. Hart; Hugh J. Hagemeyer, Jr., and William R. Park, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,610

Int. Cl. C07c *45/02*

U.S. Cl. 260—604 HF **11 Claims**

1. In a continuous hydroformylation reaction wherein liquid olefinic carbon compounds are contacted with synthesis gas comprising hydrogen and carbon monoxide, in the presence of a hydroformylation catalyst at elevated temperatures and pressures within a multistage reactor having at least three reaction zones connected in series to produce aldehydes and wherein a solution comprising said aldehyde and dissolved hydroformylation catalyst is removed from said multistage reactor, an improved process for retaining hydroformylation catalysts selected from the group consisting of cobalt carbonyls and cobalt hydrocarbonyls, in said multistage reactor while simultaneously improving the distribution of the reaction within said multistage reactor and preventing the temperature variation between adjacent reaction zones from exceeding about 4°C. and the temperature variation within said multistage reactor from exceeding about 10°C. which comprises passing the liquid olefinic carbon compounds through an absorber zone removing exit gas from the first stage of said multistage reactor, passing said exit gas through said absorber zone countercurrent to the flow of said liquid olefinic carbon compounds, whereby any hydroformylation catalyst present in said exit gas is absorbed by said olefinic carbon compounds feeding said olefinic carbon compounds to the first stage of



said multistage reactor, recycling the gaseous effluent from said absorber zone to the last stage of said multistage reactor, removing said solution comprising said aldehyde product and dissolved hydroformylation catalyst from the last stage of said multistage reactor, passing said solution comprising said aldehyde product and dissolved hydroformylation catalyst through a scrubbing zone, passing at least a portion of the synthesis gas through said scrubbing zone countercurrent to said solution whereby any volatile hydroformylation catalyst present in said solution is intrained in said synthesis gas, passing said synthesis gas to the last stage of said multistage reactor, and withdrawing an aldehyde product substantially depleted of volatile hydroformylation catalyst from said scrubbing zone.

3,868,423
PROCESS FOR PREPARING BETA,BETA'-BIS-(3,5-DIBROMO-4-HYDROXY-PHENYL)-PROPANE

Fernando Montanari; Benedetto Calcagno, both of Milan, and Luciano Conti, Grizzana, all of Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed Dec. 22, 1971, Ser. No. 211,120

Claims priority, application Italy, Dec. 23, 1970, 33466/70

Int. Cl. C07c *39/24, 37/00*

U.S. Cl. 260—619 A **6 Claims**

1. A process for the manufacture of beta, beta'-bis-(3,5-dibromo-4-hydroxyphenyl)-propane by the bromination of beta, beta'-bis-(4-hydroxyphenyl)-propane which comprises the steps of (a) supplying liquid bromine and gaseous chlorine to a solution of beta, beta'-bis-(4-hydroxyphenyl)-propane dissolved in methanol at a rate such that the total quantity of bromine added is maintained in large excess of the total quantity of chlorine added; (b) terminating the supplying of bromine; (c) continuing the supplying of chlorine until the total molar quantity of chlorine added is in moderate excess to the total molar quantity of bromine added; and (d) recovering

beta, beta'-bis-(3,5-dibromo-4-hydroxyphenyl(-propane from the products of the reaction, wherein in steps (a), (b) and (c) the temperature is maintained at levels not exceeding 30°C.

3,868,424
PROCESS FOR THE PREPARATION OF ORTHO-HYDROXYBENZYL ALCOHOLS

Emile Mourier, Villeurbanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 23, 1970, Ser. No. 92,312
Claims priority, application France, Nov. 24, 1969, 69.40394
Int. Cl. C07c *27/00, 37/00*
U.S. Cl. 260—621 **6 Claims**

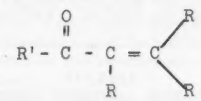
1. In a process for the preparation of an ortho-hydroxybenzyl alcohol from a phenol having at least one hydrogen atom in the ortho position to the hydroxyl radical, wherein the phenol is reacted with a boric acid or boron trioxide, the resulting reaction product treated with formaldehyde and the resulting ortho hydroxybenzyl meta-borate ester hydrolysed, the improvement which comprises hydrolyzing the orthohydroxybenzyl meta-borate ester by contacting said ester with a mixture consisting essentially of water and an ether selected from the group consisting of dipropyl ether, diisopropyl ether, dibutyl ether, diisobutyl ether, a diether or polyether of ethylene glycol, a diether or polyether of triethylene glycol, diphenyl ether, anisole and phenetole.

3,868,425
STABILIZED VINYLIDENE BROMIDE

Joseph P. Kleiman, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 23, 1973, Ser. No. 363,072
Int. Cl. C07c *17/40*
U.S. Cl. 260—652.5 P **2 Claims**

1. Vinylidene bromide stabilized with a stabilizing amount of less than 20 weight % of a ketone having up to about 12 carbon atoms and the formula



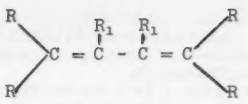
wherein R is selected from the class consisting of hydrogen and lower alkyl of up to five carbons, and R' is lower alkyl of up to about five carbons.

3,868,426
STABILIZED VINYLIDENE BROMIDE

Joseph P. Kleiman, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 23, 1973, Ser. No. 363,071
Int. Cl. C07c *17/40*
U.S. Cl. 260—652.5 P **3 Claims**

1. Vinylidene bromide stabilized with a stabilizing amount of less than 20 weight % of a conjugated butadiene of from four to about 12 carbon atoms having the formula



wherein R is selected from the class consisting of hydrogen and lower alkyl of up to eight carbons, and R_1 is selected from the class consisting of hydrogen, chlorine, bromine, and alkyl radicals of up to about eight carbon atoms, such that no more than one R_1 is halogen.

3,868,427
DEHYDROCOUPLING PROCESS

Raymond A. Franz, Baton Rouge, La., assignor to Monsanto Company, St. Louis, Mo.

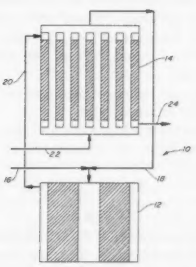
Filed Oct. 19, 1973, Ser. No. 408,232
Int. Cl. C07c *15/14*
U.S. Cl. 260—668 C **11 Claims**

1. The method of preparing 1,2-diphenylethylene and derivatives thereof which comprises contacting in the vapor phase at a temperature in the range of about 500° C. to about 750° C., a phenylmethane and oxygen in a molar ratio of about 0.1 to about 1.0 mol of oxygen per mol of the phenylmethane and at least one halogen in a molar ratio of up to 0.015 mol of halogen per mol of the phenylmethane in the presence of alpha alumina coated with 1 to 25 monolayers of a palladium oxide.

3,868,428
PROCESS AND APPARATUS FOR THE DEHYDROGENATION OF ALKYLATED AROMATIC HYDROCARBONS

Robert P. Cox, Wyckoff, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 12, 1973, Ser. No. 350,529
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 R **7 Claims**



1. A process for effecting the catalytic dehydrogenation of an alkylated hydrocarbon, which comprises:

a. passing an alkylated hydrocarbon and a diluent gas through a catalytic adiabatic reaction zone operated at an inlet temperature from about 900°F. to about 1,500°F.;

b. withdrawing an effluent from said adiabatic reaction zone, said effluent being at a temperature less than said inlet temperature;

c. passing said effluent through a catalytic non-adiabatic reaction zone, said effluent being heated, by indirect heat transfer, during passage therethrough to effect a temperature rise through said non-adiabatic reaction zone at least about equal to the temperature decrease through said adiabatic reaction zone.

3,868,429

SEPARATION OF XYLENES

William Donald Faulkner, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburg, Pa.

Filed Nov. 1, 1972, Ser. No. 302,833
Int. Cl. C07c 7/12
U.S. Cl. 260—674 SA 3 Claims

1. Method of separating a mixture of xylene isomers into a raffinate and a paraxylene-enriched product by preferential adsorption of paraxylene comprising contacting the mixture of xylene isomers with molecular sieve activated carbon having generally rectangular pore openings whose dimensions are from 3.3 to about 7.0 angstroms by from 6.7 to about 7.0 angstroms, to adsorb a paraxylene-enriched adsorbate, and recovering the adsorbate from the said molecular sieve activated carbon.

3,868,430

PROCESS FOR THE SEPARATION OF ETHYLBENZENE FROM XYLENES

Michele Giangaspero, Monfalcone; Giorgio Tlustos, Trieste; Marino Bose, Trieste, and Domenico Corsi, Trieste, all of Italy, assignors to Aquila S.p.A., Trieste-Via Dante, Italy

Filed Jan. 2, 1974, Ser. No. 429,825
Claims priority, application Italy, Dec. 29, 1972, 33783/72
Int. Cl. C07c 7/02, 15/08
U.S. Cl. 260—674 A 25 Claims

1. In a process for separation of ethylbenzene from a mixture comprising essentially ethylbenzene and xylenes comprising the successive steps of:

separating the mixture into a fraction containing essentially the ortho-xylene present in the mixture, a fraction containing essentially the para-xylene and a fraction containing ethylbenzene,

catalytically hydrogenating the fraction containing ethylbenzene to form a mixture containing ethylcyclohexane separating, by distillation, the ethylcyclohexane from the hydrogenation mixture, and

catalytically dehydrogenating the ethylcyclohexane into ethylbenzene,

the improvement which comprises the steps of

carrying out the catalytic hydrogenation partially and selectively until the conversion of ethylbenzene into ethylcyclohexane is between 50 and 99% of the ethylbenzene subjected to hydrogenation, the conversion of xylenes being between 10 and 50% of the xylenes subjected to hydrogenation,

separating the non-hydrogenated xylenes from the partially hydrogenated mixtures and

separating the ethylcyclohexane and the non-hydrogenated ethylbenzene from the remainder of the hydrogenated mixture.

3,868,431

ELASTOMER PRODUCTION

Francis Gowland Hutchinson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 19, 1973, Ser. No. 352,690. The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.
Int. Cl. C08g 41/04
U.S. Cl. 260—859 R 10 Claims

1. In a process for the production of an elastomeric material from a homogeneous composition comprising from 50% to 95% by weight of the precursors of a cross-linked polyurethane which, when reacted alone in the absence of ethylenically unsaturated material, are capable of forming an elastomeric polyurethane having a glass-rubber transition temperature of 25° C or less, and from 50% to 5% by weight of at least one polymerisable ethylenically unsaturated material, in which process the reaction of the polyurethane precursors is substantially completed before polymerisation of the ethylenically unsaturated material is allowed to proceed to the extent that the polymer so produced forms a separate phase and in which polymerisation of the ethylenically unsaturated material is thereafter completed, the improvement which comprises using in the process an ethylenically unsaturated material which contains at least one polyfunctional ethylenically unsaturated material and is selected so as to produce, after polymerisation, a cross-linked polymer having on average a molecular weight between cross-links of not greater than 2,500.

3,868,432

DENTURE ADHESIVE PREPARATION

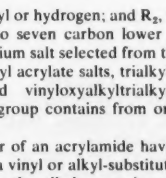
James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,637
Int. Cl. C08f 29/36, 33/08
U.S. Cl. 260—874 8 Claims

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0 to about 80 percent by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material selected from the group consisting of:

1. a copolymer of an acrylamide having the formula:



(I)

wherein R_1 is methyl or hydrogen; and R_2, R_3, and R_4 are each hydrogen or one to seven carbon lower alkyl, with a vinyl quaternary ammonium salt selected from the group consisting of trialkylaminoalkyl acrylate salts, trialkylaminoalkyl methacrylate salts, and vinyloxyalkyltrialkylammonium salts, wherein the alkyl group contains from one to seven carbon atoms; and

2. a copolymer of an acrylamide having the formula (I) above with a vinyl or alkyl-substituted vinyl pyridinum salt, wherein the alkyl group is one to seven carbon lower alkyl; and

B. from about 20 to about 99 percent by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of copolymers of maleic acid with vinyl-lower alkyl-ether wherein the alkyl group has from one to five carbon atoms.

3,868,433

THERMOPLASTIC ADHESIVE COMPOSITIONS

Kenneth W. Bartz, Baytown, Tex.; John J. Higgins, Westfield; Anthony J. Berejka, Cranford, both of N.J., and Amerigo J. Di Cresce, Houston, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 3, 1972, Ser. No. 240,502
Int. Cl. C08f 29/12
U.S. Cl. 260—876 R 16 Claims

1. A hot melt adhesive composition comprising a mixture of:

a. 5 to 95 weight percent of a conventional hot melt polyolefin thermoplastic base component,

b. 95 to 5 weight percent of a 10 to 300 MFR, C_2 to C_4 polyolefin polymer grafted with from 0.1 to 50 weight percent of a monomer in an extruder reaction wherein said grafted polymer has a MFR at least 25% higher than said polymer before grafting and wherein said monomer is selected from a group consisting of (a) a C_3 to C_{10} unsaturated monocarboxylic acid, (b) unsaturated polycarboxylic acids, (c) metal salt and glycidyl derivatives of the foregoing, and (d) mixtures of the foregoing, and

whereby said polymer comprises 60 to 40 weight percent of an elastomer, selected from the group consisting of:

i. ethylene/propylene copolymers and ethylene/propylene diene monomer elastomers,
ii. polyisobutylene elastomers,
iii. butyl rubber elastomers,
iv. chlorobutyl elastomers,
v. combinations of the foregoing.

3,868,434
POLYMER COMPOSITION AND PROCESS

Richard C. Westphal, Leominster, and Paul Heinig, Bolton, both of Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.

Continuation-in-part of Ser. No. 457,794, May 21, 1965, abandoned, which is a continuation-in-part of Ser. No. 155,200, Nov. 27, 1961, abandoned, which is a continuation-n-part of Ser. No. 759,145, Sept. 5, 1958, abandoned. This application May 23, 1967, Ser. No. 640,478

Int. Cl. C08f *1/60, 29/08, 29/34*

U.S. Cl. 260—880 R **17 Claims**

1. A moldable monovinyl aromatic polymer composition formed by the polymerization of (a) at least onbe monovinyl aromatic monomer, (b) 0 to about 30 percent by weight of the total monomer weight of a copolymerizable monomer of the group consisting of esters of acrylic and methacrylic acids, acrylonitrile, and esters of itaconic acid, and (c) a rubbery 1,4-polybutadiene, (1) by dissolving said rubbery 1,4-polybutadiene in said monomers and (2) by polymerizing said monomers under free-radical polymerization conditions until the polymerization of said monomers is substantially completed, said polymerization carried out employing mass polymerization techniques under agitation conditions to provide a dispersed and substantially uniform composition; said 1,4-polybutadiene being present in an amount of from 1 percent to about 20 percent, based on the total final polymer composition weight, said amount of 1,4 polybutadiene being effective in substantially enhancing the impact value of said polymer composition, and said 1,4-polybutadiene characterized by having a cis butadiene content of at least 25 percent and a 1,2-addition butadiene content of not more than about 10 percent based on the weight of said 1,4-polybutadiene.

3,868,435
PROCESS FOR MAKING MOLDED SILICON BODIES

Hilmar Daxer, Munich, Germany; Wolfgang Dietz, Palos Verdes Peninsula, Calif.; Hans Herrmann, Burghausen, Germany, and Manfred Vogerl, Santa Monica, Calif., assignors to Consortium fur Elecktrochemische Industrie GmbH, Munich, Germany

Continuation-in-part of Ser. No. 118,821, Feb. 25, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,584

Claims priority, application Germany, Feb. 28, 1970, 2009459

Int. Cl. B29c *1/04;* **B29d** *11/00*

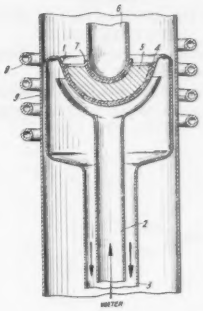
U.S. Cl. 264—1 **3 Claims**

1. Process for making molded silicon bodies by melting pure silicon by inductive heating in a mold capable of being cooled, which comprises the steps of:

a. placing against the inner surface of said mold a liner consisting of a solid body of pressure-sintered finely structured quartz made of quartz wool having a fiber diameter between about 8 and 10 micron, and a fiber length not less than about 1 mm, having substantially the same configuration as the interior portion of said mold, said quartz liner having been sintered at a temperature between about 1,300° and about 1,600°C. under pressure between about 0.05 and about 1 kg/cm² for a period of time between about 10 and about 60 minutes;

b. introducing into said lined mold highly purified silicon having a grain size between about 5 and about 20 mm;

c. melting said silicon grains in an atmosphere of a gas inert thereto to form a body of molten silicon;



d. cooling said body of molten silicon at a high temperature gradient with the use of water as coolant until the body has solidified; and

e. separating the solidified silicon melt from said liner.

3,868,436
PRODUCTION OF ELECTRICAL CONDUCTORS COVERED WITH CROSSLINKED MATERIAL

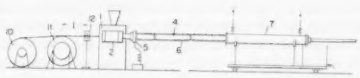
Masaaki Ootsuji, Osaka; Masatake Matsui, Amagasaki; Masaru Fuwa, and Kiyoshi Takahashi, both of Ami-Machi, all of Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo-to and Dainichi Nihon Densen Kabushiki Kaisha, Amagaski-shi-Hyogo-ken, Japan, part interest to each

Filed Dec. 15, 1972, Ser. No. 315,556

Claims priority, application Japan, Dec. 17, 1971, 46-101858

Int. Cl. B29f *3/10*

U.S. Cl. 264—40 **5 Claims**



1. In a process for producing a cable covered with a cross-linked material, comprising extruding a cross-linkable material onto a conductor which is continuously passed through a long-land portion of an extruding die unit and subsequently through a cooling device directly connected to the exit of said extruding die unit, forming and vulcanizing said cross-linkable material through said long-land portion, and cooling said vulcanized material on said conductor by pressurized cooling fluid under a pressure P of 1–30 Kg/cm² in said cooling device, which pressure exerts an irregular pulling force along the length of said cable the improvement comprising applying a braking force T(kg) to a portion of said conductor and in the direction opposite to the moving direction of said conductor prior to said conductor entering the extruder-crosshead; said braking force T being determined from the following relationship:

$$\pi(D_o^2 - d^2)/4 \cdot P + T_{min} < T < \pi(D_o^2 - d^2)/4 \cdot P + T_{max}$$

wherein D_o (cm) is the inner diameter of the delivery end of the land portion; D (cm) is the maximum delivered outer diameter of the material covering the conductor; d (cm) is the outer diameter of the conductor; p (kg/cm²) is the pressure of said cooling fluid; T_{min} (kg) is the braking force in the case where $D = 0.95\ D_o + 0.05\ d$ and $P = 0$ and T_{max} (kg) is the

braking force in the case where $D = 1.2\ D_o - 2\ d$ and $P = 0$ whereby the irregularity of said pulling force is eliminated by the application of said braking force.

3,868,437

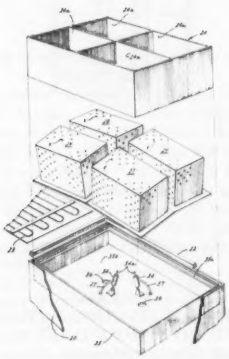
METHOD FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

Norman F. Houghton, Connersville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Oct. 19, 1973, Ser. No. 408,108. The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. B29c *17/04*

U.S. Cl. 264—92 **4 Claims**



1. In a method of forming a unitary article, comprising at least a pair of adjacent walled structures having unidirectionally presented openings, from a unitary sheet of thermoplastic material, utilizing at least a pair of substantially unidirectionally presented molds shaped in correspondence to the structures to be formed and so associated as to be pivotable both about an edge of its base and in the plane of its base between one position in which confronting walls therof are closely spaced in accordance with the spacing of the structures to be formed and another position in which said confronting walls are spaced apart a substantially greater distance than in said one position, the steps which comprise: causing a heat softened unitary sheet of thermoplastic material to extend over, and central portions thereof to occupy space between, such molds when the latter are in the mentioned other position in which the confronting walls of said molds are substantially spaced; utilizing an assist plug structure to move said central portion of said sheet of material into the regions between said molds; pivoting said molds in the recited two directions to said one position in which they are closely spaced; and utilizing differential fluid pressure to cause said sheet to conform to surfaces of said molds in said one, closely spaced position.

3,868,438

METHOD FOR PROCESSING SPECTACLE FRAMES

Vigilio Fedon, and Frazione Di Vallesella, both of Belluno, Italy, assignors to Salottica S.r.l., Brescia, Italy

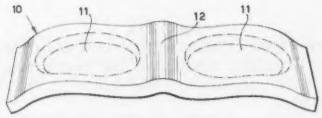
Filed June 8, 1973, Ser. No. 368,121

Claims priority, application Italy, June 13, 1972, 25614/72

Int. Cl. B29d *11/00*

U.S. Cl. 264—156 **2 Claims**

1. A method for fabricating spectacle frames having curved lens areas comprising the steps of: preparing a planar slab of thermoplastic material; hot-working said planar slab of thermoplastic material to pre-shape it with partially curved lens areas; milling said lens areas of said pre-shaped slab to provide apertures for the lenses; milling in a plane the internal sides of the lens rims surrounding said apertures to provide coplanar



grooves for engaging the lenses; hot-working the pre-shaped and milled slab to meniscus-shape the lens rims and the grooves therein.

3,868,439

METHOD OF INCREASING COPPER PRODUCTION

Milton E. Wadsworth, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Feb. 9, 1973, Ser. No. 331,140

Int. Cl. C22b *15/08*

U.S. Cl. 423—41 **2 Claims**

1. In a method of enhancing recovery of copper values from an ore material having relatively low copper values; the method comprising sequentially:

preparing the ore material for a subsequent leaching by first wetting the ore material with a first solution consisting essentially of aqueous sulfuric acid having a pH within the range on the order of about 1.0 to 2.0, the wetting step comprising applying sufficient aqueous sulfuric acid to the ore material to at least acidify pellicular water in the ore material without causing a significant amount of the sulfuric acid to percolate from the ore material;

exposing the ore material to the atmosphere until aeration occurs; and

conducting a leaching step for extracting copper values from the ore material by percolating a second solution comprising a solution of sulfuric acid and iron ions through the ore material and collecting the second solution for processing to recover copper values therefrom.

3,868,440

RECOVERY OF METAL VALUES FROM COPPER SLAG

Kenneth O. Lindblad, and Ralph E. Dufresne, both of Deer Lodge, Mont., assignors to The Anaconda Company, Butte, Mont.

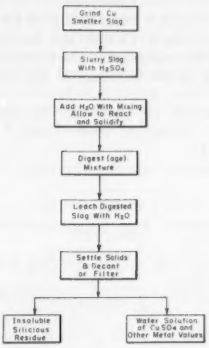
Filed May 30, 1973, Ser. No. 365,243

Int. Cl. C01g *11/10;* **C22b** *15/08*

U.S. Cl. 423—41 **7 Claims**

7. A process for recovery of metal values from copper smelter slag material which comprises mixing with about one part by weight of the slag material up to one parat of water, adding with agitation about one part of concentrated sulfuric acid and up to about one part of water to form a mixture which contains a total slag-to-water ratio of about 1:1 thereby to produce a substantially dry, solid material, allowing the resulting dry, solid material to react for a time sufficient to

insure maximum conversion of metal values to water-soluble form, and leaching the resulting dry, solid reaction product


Grind Cu Smelter Slag
Slurry Slag With H_2SO_4
Add H_2O With Mixing Allow to React and Solidify
Digest (age) Mixture
Leach Digested Slag With H_2O
Settle Solids & Decant or Filter
Insoluble Siliceous Residue
Water Solution of $CuSO_4$ and Other Metal Values

with water to recover in the leach solution metal values originally present in the slag.

3,868,441
PROCESS FOR REDUCING TRIVALENT TITANIUM CONTENT IN SLAG

Robert B. Agee, Baker, and Manuel Rodriguez, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 2, 1973, Ser. No. 356,433

Int. Cl. C04g *23/00*; **C01g** *23/04*

U.S. Cl. 423—69 **6 Claims**

1. A process for reducing the content of trivalent titanium in trivalent titanium-containing solid titaniferous slag which comprises:

a. applying heat to the titaniferous slag in the presence of oxygen until the exothermic oxidation of the trivalent titanium is initiated, that is at a slag temperature of about 150°C, and discontinuing the application of heat at that initiation point so that the temperature of the titaniferous slag continues to rise due to the heat generated by the exothermic oxidation of the trivalent titanium; and

b. reapplying heat to the titaniferous slag after the temperature of the slag reaches a maximum, whereby the temperature of the titaniferous slag is maintained within a range of from about 300°C to about 450°C until the desired reduction of the trivalent titanium contents is achieved.

3,868,442
ALUMINA EXTRACTION

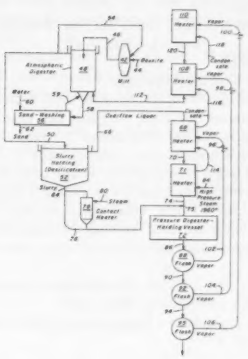
William M. Fish, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 6, 1972, Ser. No. 286,813. The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. C01f *7/06*

U.S. Cl. 423—121 **8 Claims**

1. In a process for preparation of sodium aluminate liquor by formation of a caustic slurry of bauxite at atmospheric pressure with subsequent high-pressure digestion thereof, the improvement which comprises, after said formation of said caustic slurry, and prior to pressure digestion forming a desilication product in a holding zone containing said slurry by combination of dissolved silica with alumina and caustic to form an insoluble sodium aluminum silicate, separating said slurry into a high-solids coarse portion comprising material more than 200 mesh in size and a low-solids fines portion comprising material less than 200 mesh in size, conducting said low-solids fines portion through at least one indirect heat exchanger, whereby said low-solids fines portion is heated, and thereafter reuniting said high-solids coarse portion with



said low-solids fines portion for subsequent high-pressure digestion.

3,868,443
PROCESS FOR THE MANUFACTURE OF NITRIC ACID

Erich Scheibler, and Hans-Joachim Volker, both of Dortmund, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Filed Sept. 25, 1972, Ser. No. 292,000

Claims priority, application Germany, Sept. 28, 1971, 2148329

Int. Cl. C01b *21/40*

U.S. Cl. 423—392 **1 Claim**

1. A process for the simultaneous manufacture of nitric acid of medium (50 to 70% by weight) and high concentration (80 to 100% by weight) from a nitrogen monoxide containing gas stream issuing from the combustion of a gas mixture of ammonia and air with a content of 12 to 13% of ammonia in the presence of catalysts, the process comprising

a. oxidizing the nitrogen monoxide in the gas stream to a higher state of oxidation by countercurrent flow of nitric acid of a concentration of 50 to 70% by weight.

b. cooling the gas stream to a temperature of approximately 60°C.,

c. compressing the gas stream to approximately 10 atm,

d. mixing the gas stream with the first degassing effluent of nitric acid of 50 to 70% by weight concentration,

e. cooling this mixed gas stream in a first step to approximately 30°C. and in a second step to about 20°C. and separating the condensate from residual gases;

f. reacting the residual gases from the second cooling step with compressed air, water, nitrogen oxide bearing gas of the following absorption step for nitric acid of high concentration and the drained aqueous nitric acid from the oxidation step of nitrogen monoxide in an absorption step to form nitric acid of a concentration of 50 to 70% by weight,

g. degassing the nitric acid of medium concentration once and using part of it to oxidize the nitrogen monoxide,

h. reacting the condensate from the two cooling steps of (e) with the bottom product of about azeotropic concentration of the distillation step (i) for nitric acid of high concentration up to 90% by weight, and

i. distilling the effluent from the absorption step (h) in nitric acid of high concentration (more than 90% by weight) and in a bottom product of about azeotropic concentration.

3,868,444

PROCESS FOR THE PREPARATION OF POROUS SODIUM BICARBONATE

Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1969, Ser. No. 880,424
Int. Cl. C01d 7/10
U.S. Cl. 423—422 12 Claims

1. A process which comprises:

a. reacting ammonium bicarbonate with a soluble sodium salt in aqueous solution, wherein the concentration of sodium ion is greater than about 2.5 gram ions per liter and the bicarbonate ion concentration is greater than about 0.04 gram ions per liter, in the presence of carbon dioxide in sufficient quantity to create a partial pressure of from 15 to 40 psig while agitating the solution with sufficient vigor to form crystals of sodium bicarbonate having longest dimensions which vary from 1 to 10 microns;

b. separating the sodium bicarbonate crystals from the solution and compacting them; and

c. drying the crystals at a temperature of from about 20° to about 75° C.

3,868,445

DOSAGE UNIT CONTAINING A SUBSTANCE SHOWING A TOPICAL EFFECT ON THE EYE, AND A METHOD OF PREPARING SAME

Emma Marta Ryde, and Jan Erik Ekstedt, both of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Filed Nov. 16, 1973, Ser. No. 416,717
Claims priority, application Sweden, Nov. 30, 1972, 15652/72
Int. Cl. A61k 27/12
U.S. Cl. 424—14 4 Claims

1. The method of medicating the eye with ophthalmic medication the improvement which includes the step of placing beneath one eyelid a solid shaped body having a largest dimension between the limits of 2 – 20 mm and remaining dimensions within the range of 0.5 – 10 mm, with softly rounded corners so as not to cause eye irritation, the body being either planar or suitably molded to obtain the shape of a lens capable of fitting into the space between the eye and the surrounding tissue with a surface facing toward the eye, said solid shaped body as a result of its plasticity forming itself to the shape of the eye cavity when inserted into the eye, said body comprising a mixture of:

a. 5 – 90% of at least one lipophilic substance having a melting point of 37°–75°C and being selected from the group consisting of paraffin, bees wax and glycerol esters of 8 – 22 carbon atom fatty acids having melting points within the aforementioned range,

b. 0 – 40% of at least one water-soluble or water-swellable polymer selected from the group consisting of dextran, lower hydroxy-alkyl dextran, carboxy-methyl dextran, lower hydroxy-alkyl cellulose, lower alkyl-cellulose, carboxymethyl cellulose, polyvinyl alcohol, dextrin, starch, polyvinyl pyrollidone and polyalkylene glycols, in solid finely-divided form having a particle size less than approximately 150 microns,

c. 0.05 – 30% of at least one drug showing a topical effect on the eye with a particle size less than approximately 150 microns, and

d. 0.2 – 20% of at least one water-insoluble lipophilic polymer having a softening temperature exceeding 70°C and having a melting point exceeding 85°C and which is soluble in the lipophilic substance or substances in molten form to serve as stabilizer for the mixture, said polymer being selected from the group consisting of polyvinyl acetate, ethylenevinylacetate-copolymer, polybutyl methacrylate, polyethylene, polypropylene, ethylene-propylene-copolymer and mixtures thereof, the percentages relating to percent by weight calculated on the total weight of the mixture.

3,868,446

THICKENED PHOSPHORUS ESTERS

Leonard Cohen; Philip B. Coulter, and Bernard M. Zeffert, all of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1963, Ser. No. 259,486
Int. Cl. A01n 23/00
U.S. Cl. 424—81 6 Claims

1. A composition of matter comprising a compound of the formula:

$$X = P(R)(Q)(R_1)$$

where R is selected from the group of alkyl and dialkylamino radicals,

R_1 is selected from the group consisting of alkoxy and cyclohexyloxy radicals,

Q is selected from the group consisting of fluoro, cyano and $-X-CH_2-CH_2-N(alkyl)_2$ groups,

X is selected from the group consisting of sulfur and oxygen, wherein the alkyl and alkyloxy groups are of 1–4 carbon atoms,

thickened with 0.1 to 2.0% by weight of a polymer selected from the group consisting of polyisobutylmethacrylate, nitrocellulose,

polymethylmethacrylate, polystyrene, and poly n-butyl methacrylate.

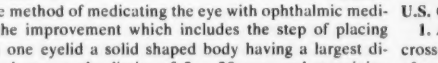
3,868,447

HEMA PASTE

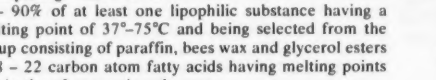
Karel Kliment, Princeton, N.J., assignor to National Patent Development Corporation, New York, N.Y.

Filed Feb. 2, 1972, Ser. No. 223,002
Int. Cl. A61k 5/00
U.S. Cl. 424—81 18 Claims

1. A paste consisting essentially of (1) 0.2 to 6.5% of a non cross-linked, organic solvent soluble, hydrophilic copolymer of a monoester having the formula:



with 0.01 to 50% of a diester of the formula



where R is hydrogen or methyl, n is 2 or 3 and x is zero, 1 or 2, (2) 5 to 10.8% of a finely divided activated inorganic filler selected from the group consisting of activated carbon, silica, alumina and diatomaceous earth, and (3) the balance an organic solvent for the copolymer, said paste having incorporated therein a biologically active drug material.

3,868,448

METHOD FOR BLOAT CONTROL

Peter A. Hahn, Grosse Point Park, Mich.; Frank J. Hartdegen, Columbia, and Marlin A. Espenshade, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,709
Int. Cl. A61k 19/00
U.S. Cl. 424—94 8 Claims

1. The method of controlling bloat in a ruminant that comprises administering to the ruminant an effective amount of the enzyme obtained by culturing *Streptomyces griseus* NRRL

5747 in a fermentation medium until said enzyme has the following characteristics:

a. 1 g. of enzyme represents about 500 units, 1 unit being that amount of enzyme which when dissolved in 1 ml. of water reduces the viscosity of 1 ml. of prepared gastric mucin by 50% in 2 hours at 39° C.;
b. said enzyme is insoluble in acidic acetone;
c. centrifuged broth from the fermentation medium contains 0.3–1.0 units of enzyme/mg. broth;
d. storage of the dry enzyme at 109° F. for 28 weeks or at 122° F. for 8 weeks results in less than 10% activity decrease.

3,868,449

INSECTICIDAL O,S-DIHYDROCARBYL-N-ACYLPHOSPHOROAMIDOTHIOATES AND S,S-DIHYDROCARBYL-N-ACYLPHOSPHOROAMIDODITHIOATES

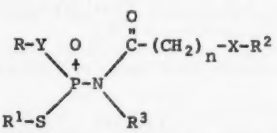
Philip S. Magee, Ignatia, Calif.

Division of Ser. No. 317,315, Dec. 21, 1972, Pat. No. 3,801,680, a continuation-in-part of Ser. No. 13,846, Feb. 24, 1970, Pat. No. 3,716,600, which is a continuation-in-part of Ser. No. 810,383, March 25, 1969, abandoned. This application Jan. 14, 1974, Ser. No. 432,929

Int. Cl. A01n *9/36*

U.S. Cl. 424—217 **20 Claims**

1. An insecticidal composition comprising an insecticidally effective amount of a compound of the formula



wherein R and R^1 individually are alkyl, alkenyl or alkynyl of up to 6 carbon atoms, Y and X individually are oxygen or sulfur, n is a whole number of from 1 to 6, R^2 is alkyl of 1 to 6 carbon atoms, aryl of up to 10 carbon atoms substituted with up to 2 fluorine, chlorine or bromine atoms, and R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, in a biologically inert carrier.

3,868,450

PROCESS FOR PRODUCING AN ANTI-VIRUS SUBSTANCE FOR PLANTS

Yujiro Harada, Tokyo; Kiyoshi Kumabe, Funabash; Tsuneo Sato, Yokohama; Yoshinobu Miyamura, Ube; Fumio Kato, Sunto, and Mikio Tanimoto, Kofu, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 90,084, Nov. 16, 1970, abandoned, Continuation-in-part of Ser. No. 843,343, July 22, 1969, abandoned. This application Apr. 19, 1972, Ser. No. 245,642

Int. Cl. H61k *21/00*

U.S. Cl. 424—115 **3 Claims**

1. A process for producing a substance 84-B-3 capable of inhibiting plant disease virus, which comprises cultivating in a medium containing an assimilable carbon source and nitrogen source and inorganic substance a microorganism belonging to Streptomyces selected from the group consisting of *Streptomyces Rameus* (ATCC21273) and Streptomyces S.P. No. 290 (ATCC 21274) until a sufficient amount of the 84-B-3 is accumulated therein, and recovering the accumulated 84-B-3 therefrom.

3,868,451

ADENOSINE-5'-ESTERS IN TREATING ANGINA PECTORIS

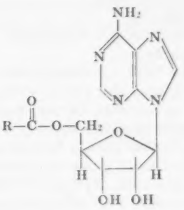
Herman Hal Stein, Skokie, Ill., and Thomas Dillard Darby, Milford Court, Ky., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 129,606, March 30, 1971, abandoned, and a continuation-in-part of Ser. No. 28,916, April 15, 1970, abandoned. This application May 2, 1973, Ser. No. 356,530

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **4 Claims**

1. The method of increasing the supply of coronary sinus oxygen in a mammalian patient in need of said coronary oxygen increase comprising orally administering to said patient a therapeutically effective amount of a compound of the formula



wherein R is C_1–C_3 alkyl.

3,868,452

17ALPHA-ETHYNYLESTRIOL 3-CYCLOPENTYL ETHER

Russell J. Kraay, and Eugene Farkas, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 136,671, April 23, 1971, Pat. No. 3,790,605, which is a continuation-in-part of Ser. No. 127,690, March 24, 1971, abandoned. This application Nov. 1, 1973, Ser. No. 411,988

Int. Cl. A61k *17/06*

U.S. Cl. 424—238 **2 Claims**

1. The method of treating estrogen deficiency symptoms in mammals which comprises administering an average of from 5 to 500 μg. per day of 17α-ethynylestriol 3-cyclopentyl ether to a mammal suffering from estrogen deficiency.

3,868,453

16-METHYLENE-9/BETA, 10ALPHA-STEROID COMPOUNDS, PHARMACEUTICAL PREPARATIONS WHICH CONTAIN THE NOVEL COMPOUNDS AS ACTIVE INGREDIENTS AND METHODS OF PRODUCING THE SAID COMPOUNDS AND PREPARATIONS

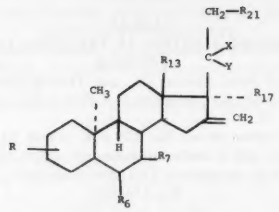
Harmen Van Kamp, and Anna Maria De Wachter, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,506

Int. Cl. A61k *17/06*

U.S. Cl. 424—243 **21 Claims**

1. A pharmaceutical preparation comprising, an endocrinologically effective amount of a compound of the formula



where

R is a 3-keto-4-dehydro,
1,2-methylene-3-keto-4-dehydro,
3-keto-1,4-bisdehydro,
3-keto-4,6-bisdehydro,
1,2-methylene-3-keto-4,6-bisdehydro,
3-keto-1,4,6-trisdehydro,
3OR-4,6-bisdehydro,
1,2-methylene-3-OR-4,6-bisdehydro,
3-OR-3,5-bisdehydro,
1,2-methylene-3-OR-3,5-bisdehydro or
3-OR′-1,4,6-trisdehydro group, where OR represents an etherified or esterified hdyroxy group and

OR′ represents an esterified hydroxy group, R_6 is a hydrogen atom, a chlorine atom, a fluorine atom, a 6,6-difluoro group, a 6,6-dichloro group or a methyl group, while, if R_6 is a hydrogen atom, R_7 is a 6,7-methylene group, R_7 is a hydrogen atom or a 6,7-methylene group, while, if R_7 is a 6,7-methylene group,

R_6 represents a hydrogen atom, a chlorine atom or a fluorine atom,

R_{17} is an etherified hydroxy group containing from one to five carbon atoms or an esterified hydroxy group containing from one to seven carbon atoms,

R_{21} is a hydrogen atom, a fluorine atom, a hydroxy group or an esterified hydroxy group,

R_{13} is a methyl or ethyl group, and X and Y either together represent a double-bonded oxygen atom or X is a hydrogen atom and Y is a hydroxy or esterified hydroxy group and a finely divided pharmaceutically acceptable carrier therefore.

3,868,454

PSORIASIS TREATMENT WITH MYCOPHENOLIC ACID DERIVATIVES

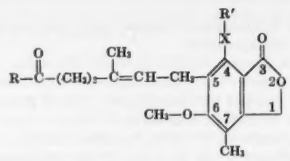
Irving S. Johnson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 280,626, Aug. 14, 1972, Pat. No. 3,777,020, which is a continuation-in-part of Ser. No. 191,824, Oct. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 93,432, Nov. 27, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 396,027The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.

Int. Cl. A61k *27/00*

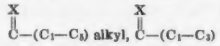
U.S. Cl. 424—248 **2 Claims**

1. A method of treating psoriasis comprising the administration to a human suffering from psoriasis either orally or topically of an effective amount for treating psoriasis of a compound of the formula



wherein R is M, O-(C_1-C_5) alkyl, O-(C_3-C_5) alkenyl or

wherein R′ is H,



haloalkyl or

wherein R^2 is H or (C_1–C_8) alkyl, R^3 is H, (C_1–C_3) alkyl or (C_5–C_8) cycloalkyl, and R^2 and R^3 taken together are $(CH_2)_{4-5}$ or $(CH_2)_2$-O-$(CH_2)_2$

wherein X is S or O and M is OH, OK, ONa or ONH_4 with the provision that R′ cannot be H if R is M.

3,868,455

CERTAIN BENZYL PURINES IN COMBINATION WITH CERTAIN BENZOYLACRYLANILIDES AS COCCIDIOSTATS

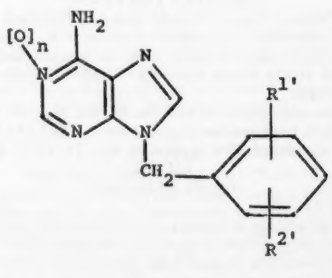
Brinton M. Miller, Middletown, and Edward C. McManus, Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1973, Ser. No. 416,335

Int. Cl. A61k *27/00*

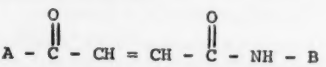
U.S. Cl. 424—253 **13 Claims**

1. A composition for combatting coccidiosis which comprises a poultry ration containing from about 0.001 to 0.008 percent by weight of a 6-amino-(substituted benzyl)purine or an N′-oxide thereof of the formula:

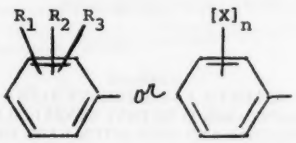


wherein *n* is the integer 0 or 1, R^1 and R^2 are independently selected from the group consisting of hydrogen, halogen, nitro and trihalomethyl, provided that at least one of such substituents is other than hydrogen and no more than one of such substituents is nitro or trihalomethyl, and R^1 and R^2

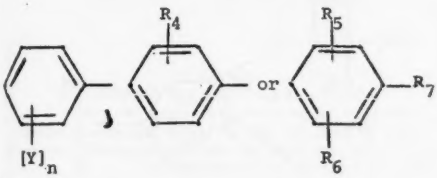
are located in the 2 and 6 positions on the carbocyclic portion of the compound except when R^1 and R^2 are both methyl the groups are located in the 3 and 4 positions on the carbocyclic ring; in combination with from 0.002 to 0.1 percent parts by weight of a benzoylacrylanilide of the formula:



where A is



where R_1, R_2 and R_3 are independently hydrogen, halo, nitro, loweralkylsulfide, loweralkylsulfonyl, loweralkyl, loweralkoxy, loweralkanoylamino, trihaloloweralkyl, cyano, or hydroxyl; provided that at least one of R_1, R_2 and R_3 is other than nitro; X is halo; and n is an integer of 4 or 5; and where B is



where Y is halo, and n is as previously defined; R_4 is cyano, halo, nitro, loweralkyl, loweralkoxy, loweralkylsulfide, trihaloloweralkyl, or hydroxyl; R_5 and R_6 are independently loweralkyl, or halo; and R_7 is halo, nitro, or hydrogen.

3,868,456

CERTAIN HYDANTOINS HAVING ANIMAL GROWTH STIMULATING ACTIVITY

Remo Faustini; Angelo Tardani, and Raffaele Del Monte, all of Milano, Italy, assignors to Societa' Farmaceutici Italia, Milan, Italy

Filed May 12, 1972, Ser. No. 252,852

Claims priority, application Italy, May 15, 1971, 24578/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **2 Claims**

1. A method of promoting the growth of domestic animals comprising feeding to a domestic animal a growth promoting amount of 1-n-propyl-3-(5′-nitrofurfurylidenamino) hydantoin.

3,868,457

METHOD OF INHIBITING HISTAMINE ACTIVITY WITH GUANIDINE COMPOUNDS

James Whyte Black, Hemel Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmeti, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Garden City, England

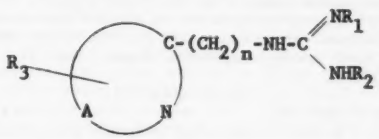
Continuation-in-part of Ser. No. 80,795, Oct. 14, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,302

Claims priority, application Great Britain, Oct. 29, 1969, 52891/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **6 Claims**

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering internally to an animal requiring inhibition of said H-2 histamine receptors in an amount sufficient to inhibit said H-2 histamine receptors a compound of the formula:



in which:

n is 2 to 5;

A taken together with the carbon and nitrogen atoms to which it is attached forms an imidazolyl ring;

R_1 is hydrogen, alkyl having one to four carbon atoms or benzyl;

R_2 is hydrogen, alkyl having one to four carbon atoms, benzyl, imidazolylethyl or amino or R_1 and R_2 together form an ethylene bridge and

R_3 is hydrogen, alkyl having one to four carbon atoms, alkylthio having one to four carbon atoms or amino or pharmaceutically acceptable acid addition salts thereof.

3,868,458

INSECTICIDAL COMPOSITIONS AND METHODS OF USE FOR COMBATING INSECTS USING SUBSTITUTED IMIDAZOLES

Maurice W. Baker; John C. Kerry; Kenneth J. Nichol; John R. Marshall; David M. Weighton, and Antonin Kozlik, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

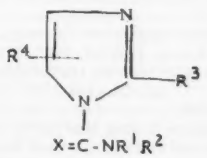
Filed Nov. 30, 1972, Ser. No. 311,009

Claims priority, application Great Britain, Dec. 7, 1971, 56781/71; July 26, 1972, 34981/72

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **10 Claims**

1. An insecticidal composition which comprises an insecticidally effective amount of a compound of the formula



in which X is selected from the group consisting of oxygen and sulphur, R^3 is selected from the group consisting of hydrogen

and alkyl of 1 to 4 carbon atoms, R^4 is selected from the group consisting of alkyl of 1 to 10 carbon atoms and cycloalkyl of 3 to 10 carbon atoms and R^1 and R^2 are selected from the group consisting of (a) R^1 and R^2 are each selected from the group consisting of alkyl of 1 to 7 carbon atoms and alkenyl of 2 to 4 carbon atoms, and (b) R^1 is alkyl of 1 to 4 carbon atoms and R^2 is selected from the group consisting of alkoxyalkyl of 3 to 6 carbon atoms and haloalkyl of 1 to 6 carbon atoms, together with a suitable carrier.

3,868,459

METHOD OF KILLING NEMATODES USING CERTAIN HALOMETHYL OXATHIENES

Christian Esclamadon, Billere, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

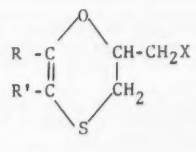
Continuation-in-part of Ser. No. 172,287, Aug. 16, 1971, , which is a continuation of Ser. No. 825,937, May 17, 1969, abandoned. This application Sept. 21, 1972, Ser. No. 290,869

Claims priority, application France, May 21, 1968, 68.152542

Int. Cl. A01n *9/12*

U.S. Cl. 424—276 **4 Claims**

1. A method of controlling nematodes which comprises applying thereto an effective nematocidal amount of a halomethyl oxathiene compound of the formula



wherein X is chlorine, R is methyl, and R′ is hydrogen or methyl, or wherein R and R′ together form a tetramethylene group.

3,868,460

THERAPEUTIC COMPOSITIONS AND METHOD

Herbert Koppe, Ingelheim, Rhein; Albrecht Engelhardt, Mainz, Rhein, and Karl Zeile, Ingelheim, Rhine, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim, Rhine, Germany

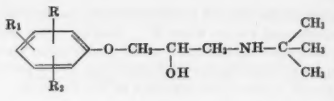
Division of Ser. No. 294,226, Oct. 2, 1972, , which is a division of Ser. No. 36,676, May 12, 1970, Pat. No. 3,740,444, which is a continuation-in-part of Ser. No. 700,376, Jan. 25, 1968, Pat. No. 3,541,130. This application Oct. 23, 1973, Ser. No. 408,743

Claims priority, application Germany, July 25, 1967, 93645; Great Britain, June 15, 1967, 27645/67; Germany, Feb. 6, 1967, 91070; June 15, 1967, 93025

Int. Cl. A61k *27/00*

U.S. Cl. 424—304 **13 Claims**

1. A composition having bradycardia and isoproterenol antagonistic activity comprising a small but effective amount of at least one active compound selected from the group consisting of racemates of 1-phenoxy -2-hydroxy-3-tert.-butylamino propanes of the formula



wherein R is cyano; R_1 is hydrogen and R_2 is selected from the group consisting of hydrogen, chlorine and alkyl and alkoxy of one to four carbon atoms, their optically active isomers and their non-toxic, pharmaceutically acceptable acid addition salts of said racemates and said optically active isomers and a major amount of a pharmaceutical carrier.

3,868,461

ESTER OF 3,4-DIHYDROXY-ALPHA (ISOPROPYLAMINO) METHYL BENZYL ALCOHOL, COMPOSITION AND ANTI-ASTHMA USE THEREOF

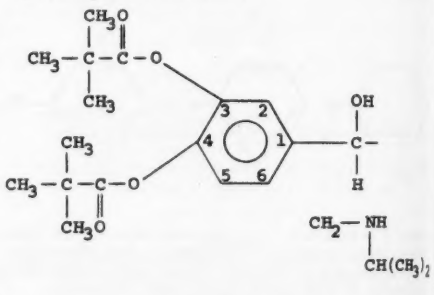
Anwar A. Hussain, and James E. Truelove, both of Lawrence, Kans., assignors to Interx Corporation, Lawrence, Kans.

Filed Nov. 22, 1972, Ser. No. 308,771

Int. Cl. A61k *27/00*; **C07c** *93/26*

U.S. Cl. 424—311 **8 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

3,868,462

THIOPSEUDOURONIUM COMPOUNDS FOR TREATING GASTROINTESTINAL HYPERACIDITY AND ULCERATION

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 142,038, May 10, 1971,. This application Dec. 22, 1972, Ser. No. 317,575

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **2 Claims**

1. A method for the treatment of gastrointestinal hyperacidity and ulceration in humans and mammals which comprises the oral or parenteral administration thereto of between about 0.1–50 mg/kg per day of at least one compound selected from the group consisting of:

1,3-dicylohexyl-2-(o-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(m-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(p-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,3-dichlorobenzyl)-2-thiopsuedouronium chloride,

1,3-dicyclohexyl-2-(2,4-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,5-dichlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(3,4-dichlorobenzyl)-2-thiopseudouronium chloride,
1,3-dicyclohexyl-2-(3,5-dichlorobenzyl)-2-thiopseudouronium chloride,
1,3-dicyclohexyl-2-(2,3,4-dichlorobenzyl)-2-thiopsuedouronium chloride,
1,3-dicyclohexyl-2-(2,3,5-dichlorobenzyl)-2-thiopseudouronium chloride,
1,3-dicyclohexyl-2-(2,3,6-dichlorobenzyl)-2-thiopseudouronium chloride,
1,3-dicyclohexyl-2-(2,4,5-dichlorobenzyl)-2-thiopsuedouronium chloride,
1,3-dicyclohexyl-2-(2,4,6-dichlorobenzyl)-2-thiopseudouronium chloride and
1,3-dicyclohexyl-2-(3,4,5-dichlorobenzyl)-2-thiopsuedouronium chloride

---

3,868,463

METHOD OF TREATING ARRHYTHMIA

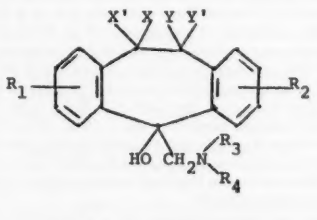
David C. Remy, 607 Jenkins Ln., North Wales, Pa. 19454

Continuation-in-part of Ser. No. 786,763, Dec. 24, 1968, abandoned. This application Feb. 26, 1973, Ser. No. 335,632

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **8 Claims**

1. A method for treating cardiac arrhythmia in animals which comprises administering to an afflicted animal an antiarrhythmia dose of an active compound having the formula



wherein

X and Y together represent

1. an additional carbon-to-carbon double bond, in which case

X′ is hydrogen and

Y′ represents a substituent selected from the group consisting of hydrogen, chlorine, bromine, fluorine, and a lower alkyl substituent;

2. X and Y together represent a methylene substituent, and

X′ and Y′ are each hydrogen; and

3. X, X′, Y and Y′ each represent hydrogen;

R_1 and R_2 are each a member selected from the group consisting of hydrogen, lower alkyl, chlorine, bromine, fluorine, trifluoromethyl, alkoxy, and a loweralkylsulfonyl; and

R_3 and R_4 are each a member selected from the group consisting of hydrogen and lower alkyl and the non-toxic pharmacologically acceptable acid addition salts of said compound.

3,868,464

PRODUCTION OF MALTOSE WITH AMYLASES PRODUCED BY STREPTOMYCES

Yoshihisa Koaze; Yutaka Nakajima, both of Tokyo; Hidemasa Hidaka, Yokohama; Tomizo Niwa, Kawasaki; Takashi Adachi, Yokosuka; Kenji Yoshida, Kawasaki; Jiro Ito; Taro Niida; Takashi Shomura, all of Yokohama, and Masahiro Ueda, Kawasaki, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 190,962, Oct. 20, 1971, Pat. No. 3,804,717. This application July 26, 1973, Ser. No. 382,752

Claims priority, application Japan, Oct. 27, 1970, 45-93951; Dec. 25, 1970, 45-11775; July 5, 1971, 46-48772

Int. Cl. C13k *7/00*

U.S. Cl. 426—48 **6 Claims**

1. A process for the preparation of saccharification products of starch mainly composed of maltose which is useful as a diet and natural sweetening material, which comprises liquefying and saccharifying a starch material including an amylose in aqueous dispersion by reacting therewith an amylase produced by cultivating a strain of *Streptomyces albus*, *Streptomyces aureofaciens*, *Streptomyces hygroscopicus*, *Streptomyces hygroscopicus var. augustomyceticus*, *Streptomyces viridochromogenes*, *Streptomyces flavus* and *Streptomyces tosaensis* under aerobic conditions in a culture medium containing known carbon sources and nitrogen sources to produce and accumulate in the culture medium an amylase having such enzymatic activities and characteristics that the pH of the optimum activity is in the range of 4.5 – 5.0, the limit in the hydrolysis of starch by this amylase is no less than 75% of the theoretical maltose and the ratio of glucose to maltose produced from starch by the action of this amylase is no more than 0.06:1 by weight, until there is formed an aqueous solution of the saccharification products of starch containing at least 70% of maltose on the dry weight basis.

3,868,465

LOW CALORIE, COLD WATER SOLUBLE QUICK SET GELATIN DESSERT

Ivan Furda, 410 Benedict Ave., Tarrytown, N.Y. 10591; Jacob Richard Feldman, 26 Susan Dr., New City, N.Y. 10956, and Donato Malizia, 4 Ashburton Pl., Yonkers, N.Y. 10701

Filed Feb. 2, 1973, Ser. No. 329,246

Int. Cl. A23l *1/04*; **A23g** *3/00*

U.S. Cl. 426—168 **19 Claims**

1. A method of producing a low-calorie, cold water soluble, quick-setting gelatin comprising preparing a solution of polyglucose and gelatin, the proportion of gelatin to polyglucose being in the range of about 1:10 to about 1:5, and co-drying the solution, in order to derive a gelatin product of enhanced gel strength and reduced tendency to maturation.

3,868,466

DEHYDRATED CITRUS PEEL PRODUCT

Horton E. Swisher, Upland, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

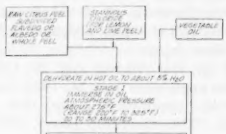
Division of Ser. No. 119,334, Feb. 26, 1971, Pat. No. 3,821,449, which is a continuation-in-part of Ser. No. 689,908, Dec. 12, 1967, abandoned. This application Sept. 4, 1973, Ser. No. 394,044

Int. Cl. A23b *7/02*

U.S. Cl. 426—199 **3 Claims**

1. A dehydrated citrus peel product produced according to the method which includes the steps of immersing fresh, raw, unfrozen citrus peel in a hot vegetable oil at a temperature of from about 220° to about 400° F for a time sufficient to boil out the major portion of the natural water content and to replace it with the hot oil, subjecting the hot oil containing the

citrus peel to vacuum to further reduce the water to less than about 15 percent, and thereafter breaking the vacuum and separating the hot oil in any order, and recovering the dehydrated peel.



3,868,467

PRESTARTER COMPOSITIONS

Eldred Olson, Colfax, Ill., assignor to Vi-Amino Feeds, Inc., Colfax, Ill.

Filed Jan. 2, 1973, Ser. No. 320,309
Int. Cl. A23k *1/00*
U.S. Cl. 426—208 **13 Claims**

1. A feed composition, including

a total protein ratio not in excess of about 18%,

high lysine corn having a lysine content of at least about 0.3% by weight of the corn, and present in a range of more then about 25% and less than about 65% by weight of the total composition,

wheat germ meal in a range of about 10% to about 40% by weight of the total composition,

a total lysine content of at least 1% by weight of the total composition, and

said high lysine corn and wheat germ meal ingredients having relative proportions so that one ingredient is accordingly increased as the other is reduced to substantially maintain the total protein ratio within said prescribed maximum level of less than about 18%.

3,868,468

PREPARATION OF A SHELF STABLE PRE-COOKED BACON PRODUCT

Robert B. Tompkin, La Grange, and Francis G. Connick, Downers Grove, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 311,960
Int. Cl. A22c *18/00*
U.S. Cl. 426—243 **6 Claims**

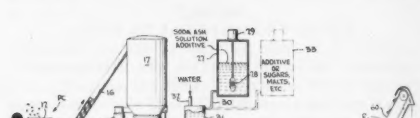
1. An improved process for producing a pre-cooked sliced bacon product that is shelf stable at ambient temperature yet has only a palatable level of sodium chloride throughout each slice of said product, said method comprising: cooking bacon slices, sliced from at least one bacon slab cured and prepared in a conventional manner, to a constant percent weight yield of between about 30–40%, whence only some of said slices from each slab have a water activity of .86, and less, and a percent brine level of at least 13%; selecting an equal plurality of the cooked bacon slices from each flank, center, center and butt quadrant of at least one bacon slab; and packing and sealing the selected slices in a container in the absence of air so as to inhibit mold growth, and whereby after a holding period of time sufficient to reach an equilibrium all of the resultant containerized product slices exhibit a water activity of less than about .86 maximum and a percent brine level of at least 13%, each of the bacon slices of said product having below about 4%, by weight, sodium chloride.

3,868,469

METHOD OF DUTCHING COCOA

Manuel L. Chalin, 68 Kingsley Rd., Kendall Park, N.J. 08824

Continuation-in-part of Ser. No. 253,839, May 16, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,517
Int. Cl. A23g *1/100*
U.S. Cl. 426—262 **10 Claims**



1. The method of continuous dutching and drying of cocoa so as to attain a rich color and other favorable parameters in the end product, comprising the steps of:

pulverizing a press cake or nibs of cocoa material into a free-flowing powder state;

forming an aqueous alkaline solution having a concentration of about 3 to 12 weight percent wherein the alkaline solution is formed from ammonia gas or a hydroxide, oxide, carbonate or bicarbonate of an alkali metal, ammonium or an alkaline earth metal or mixtures thereof;

combining said aqueous alkaline solution with said pulverized material and additional water of dilution to form a product mixture in the form of a damp mass having an initial moisture content of about 20 to 35 percent and a maximum of up to about 6 weight percent alkaline equivalent to potassium carbonate and subjecting the resultant product mixture to thorough mixing to form a homogeneous product mixture;

cooking the product mixture at a temperature of about 150°–230° F. for a residence period of about 2½ to 5 minutes while continuing mixing and while progressively increasing the pressure to a final stage of pressurization of about 500–1,300 pounds per square inch to form a heated and pressurized mass, wherein cooking is performed by feeding the product mixture into a chamber containing means to form the product mixture into a working mass corresponding to said chamber, providing progressively greater pressure on said working mass as the mixture moves from the entrance end of the chamber to the exit end, controlling the heating in said chamber to raise the temperature of the product mixture to cooking temperature;

extruding the resultant heated and pressurized mass through die means to form a product rod, wherein the step of extruding the product mass is carried out at the exit end of the elongated chamber immediately after pressurized cooking of the product mixture by passing the product mass through an extruding die having at least one restricted opening to form the product rod;

dividing the product rod into lengths to form product pellets, said pellets at this stage containing about 85–97 percent of the initial moisture content; and

drying said product pellets on a fluidized bed as the pellets continuously move along said bed by contact with a heated inert gas at a temperature of about 350°–450° F. for 2.5 to 3 minutes and then rapidly cooling the pellets with filtered air to approximately ambient temperature, wherein said pellets have a moisture content of about 4 percent; whereby dutching is carried out in a controlled fashion with interruption.

3,868,470

SEASONING INDIVIDUALLY QUICK FROZEN VEGETABLES

William M. Fallon, Tarrytown; Frank Paris, Ossining, both of N.Y., and Louis Bartenbach, Thornwood, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,245

Int. Cl. A23b *7/04, 1/06*

U.S. Cl. 426—302 **5 Claims**

1. The process of applying a seasoning sauce having a hydrocolloid therein in the form of an aqueous suspension to discretely frozen food products and mixtures thereof which comprises individually quick-freezing the food to a temperature below 10°F. in a free-flowing discrete form, charging the individually frozen food in said form to a moving open food carton to fill the contents thereof, introducing the moving filled food carton while at said reduced temperature to a sauce application zone, and applying the sauce from an extruding source that moves at a rate comparable to the rate of movement of the carton in said zone, said sauce being in the form of a flowable cohesive extruded plug at a temperature below 40°F. and above the freezing point thereof at a quantity and viscosity of 1,,000 to 17,000 cps such that the sauce upon contact commences to freeze and migrates slowly to produce a centrally located sauce charge on said food, the sauce composition having a freezing point of 15°–26° F., the sauce as applied freezing in a period less than 10 minutes and upon interception contact with the discrete food product charge undergoing such heat transfer as to migrate gradually thereover in place and centrally of the charge in the carton.

3,868,471

PROCESS FOR PREPARING CLUSTERED, MIXED READY TO EAT CEREAL PRODUCTS

George A. Decelles, and Violet M. Larson, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Apr. 9, 1973, Ser. No. 349,340

Int. Cl. A23l *1/10*

U.S. Cl. 426—303 **3 Claims**

1. A process for forming double coated clustered, ready-to-eat mixed cereal product comprising:

a. providing flattened raw grain base cereal comprising a member selected from the group consisting of wheat, rye and oats,

b. admixing additional cereal grains or parts,

c. forming a first layer of a double coating on the grain resulting from (a) and (b) by impregnating at least the surfaces of the base cereal with an edible fat by applying the the fat in a liquid condition to the surfaces of the base cereal to provide a substantially continuous layer of fat impregnation at the surface thereof,

d. thereafter applying a second layer of the double coating comprising sugar syrup to the surfaces of the product and simultaneously agitating the mass to distribute the sugar syrup over the surfaces of the cereal and form clusters, said syrup being substantially fat free,

e. the fat impregnated into the surface of the cereal causing the sugar syrup to remain on the surfaces of the cereal and the syrup being thereby distributed as a substantially continuous film of syrup over said surfaces to promote crispiness of the product and to shield the fat from oxidative rancidity and,

f. thereafter roasting said clusters at a temperature between about 300° and 450°F. for sufficient time to provide a cooked color and flavor and to dry the clusters to a moisture content of less than 5 percent, said syrup adhering the cereal pieces together at their points of contact to form the clusters, whereby the finished product has an F test value of at least 100 hours keeping time.

3,868,472

METHOD OF PRODUCING FAST DISSOLVING DIPEPTIDE SWEETNER FOR SWEET/SOUR SYSTEMS

Jeffrey H. Berg, New York, and Jerome Trumbetas, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

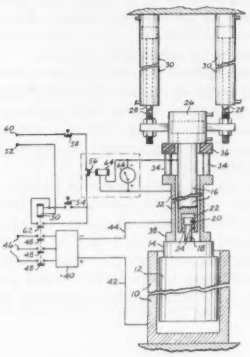
Filed Apr. 2, 1973, Ser. No. 347,094

Int. Cl. A23l *1/26*

U.S. Cl. 426—342 **8 Claims**

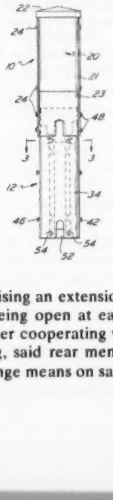
1. A process for improving the rate of solubility of dipeptide sweeteners which comprise co-grinding the dipeptide with a dry acid in a volatile organic solvent, the dipeptide and acid being in proportion to each other in the range of 1:2 to 1:4 by weight of the dipeptide to the acid and ground for a period of time sufficient to effect at least a partial coating of the dipeptide with the acid, and evaporating off the organic solvent to afford an intimate mixture of dipeptide and acid.

3,868,473
METHOD AND APPARATUS FOR MONITORING THE ELECTRODE SUPPORT OF AN ARC FURNACE
Royal H. Dimick, Albany, Oreg., assignor to Teledyne Wah Chang Albany, Albany, Oreg.
Filed Dec. 20, 1973, Ser. No. 426,552
Int. Cl. H05b 7/12
U.S. Cl. 13—13 7 Claims



4. In an arc furnace having an electrode support stub and stinger relatively movable into mutual pressure contact and a source of high current connected releasably across the stinger and an electrode-containing crucible, apparatus for controlling automatically the application of said high current across the stinger and crucible, comprising switch means in the electric circuit of said source of high current, and switch actuating means connected across the stub and stinger and operable in response to a predetermined magnitude of voltage drop across said stub and stinger to effect opening of the switch means.

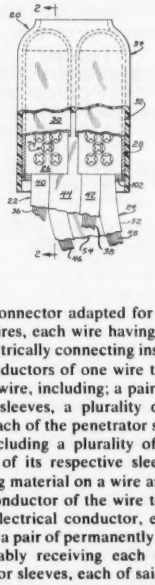
3,868,474
TERMINAL ENCLOSURE AND EXTENSION THEREFOR
Theodore M. Bunten, Rydal, Pa., assignor to Repco Products Corporation, Philadelphia, Pa.
Filed Oct. 19, 1973, Ser. No. 408,206
Int. Cl. H02g 9/02
U.S. Cl. 174—38 7 Claims



1. Apparatus comprising an extension for a terminal enclosure, said extension being open at each end, said extension including a rear member cooperating with a front member to form a hollow housing, said rear member being longer than said front member, flange means on said rear member removably supporting said front member, a channel member juxtaposed to the inner surface of said front member and cooperating therewith to define an enclosed channel, means removably securing said channel member to said front member, and means adjacent one end of said rear member for facilitating attachment of said rear member to a mating portion of a terminal enclosure.

6. Apparatus comprising a terminal enclosure adapted to contain wires, said enclosure including a rear member having side flanges and a front member removably supported by said flanges, said enclosure being closed at its top end and open at its bottom end, said enclosure having mounting means including at least one hole adjacent the bottom end thereof for removably attaching the enclosure to support structure, a detachable extension for extending the length of and for removably supporting said enclosure, said extension including a rear member having side flanges and a front member removably supported by said last mentioned flanges, said extension being open at each end, the top end of said extension being telescoped with respect to the bottom end of said enclosure, means removably attaching the top end of said extension rear member to the bottom end of said enclosure rear member, said attaching means including at least one hole in said extension rear member aligned with a mating hole of said enclosure mounting means and a removable securing means extending through the aligned holes, a mounting means adjacent the bottom end of said extension for removably attaching said extension to support structure, whereby said enclosure is selectively mounted directly on support structure or indirectly mounted on support structure by way of said extension.

3,868,475
ELECTRICAL CONNECTOR
Kenneth C. Allison, 1546 S. Shore Dr., Crystal Lake, Ill. 60014
Filed Aug. 31, 1973, Ser. No. 393,599
Int. Cl. H01r 11/08, 11/20
U.S. Cl. 174—87 10 Claims



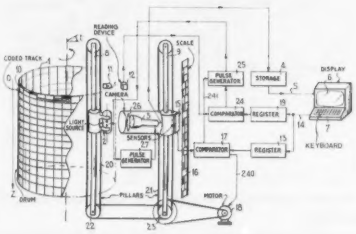
1. An electrical connector adapted for mechanically holding two electrical wires, each wire having two electrical conductors, and for electrically connecting insulated ends of each of the electrical conductors of one wire to an electrical conductor of the other wire, including; a pair of electrically conductive penetrator sleeves, a plurality of penetrator locks formed integral in each of the penetrator sleeves, each of said penetrator locks including a plurality of penetrator prongs extending inwardly of its respective sleeve for penetration through an insulating material on a wire and into engagement with an electrical conductor of the wire to provide electrical connection to the electrical conductor, each of said sleeves having an open side, a pair of permanently deformable sheaths mateably and slideably receiving each of said electrically conductive penetrator sleeves, each of said sheaths having an open side alignable with the open side of its respective sleeve,

and an insulator tube receiving said sheaths and holding the sheaths with the open sides of the sheaths facing each other, said insulator tube having a separator positionable between the sheaths to insulate electrically the sheaths from one another.

3,868,476
SYSTEM FOR LOCATING AND TRANSMITTING SELECTED IMAGES

Jacques Laplume, Le Plessis Robinson, France, assignor to Societe D'Etudes Techniques Et D'Entreprises Generales (Sodeteg), Le Plessis Robinson, France

Filed Feb. 7, 1973, Ser. No. 330,262
Claims priority, application France, Feb. 18, 1972, 72-005509
Int. Cl. G03b *23/08*
U.S. Cl. 178—6 **18 Claims**



1. A system for locating and transmitting selected images from a number of image frames of uniform dimensions, comprising:

a carrier rotatable about an axis, said carrier having mounted thereon a multiplicity of image frames in an orthogonal array with rows transverse and files parallel to said axis, each image frame being identifiable by a first coordinate counting the number of rows from a predetermined reference row and a second coordinate counting the number of files from a predetermined reference file; stationary support means extending parallel to said axis; at least one television camera provided with pick-up means axially movable along said support means;

drive means coupled with said pick-up means for axially moving same along said support means;

display means remote from said camera operatively coupled thereto for reproducing an image confronting said pick-up means;

selector means adjacent said display means for generating a first and a second identifying code respectively marking said first and said second coordinate of an image to be reproduced;

first sensing means coupled with said pick-up means for generating a first counting code marking the axial position of said pick-up means;

second sensing means coacting with said carrier for generating a second counting code marking the rotary position of said carrier relative to a predetermined reference position;

first comparision means connected to said selector means and to said first sensing means for receiving therefrom said first identifying and counting codes and for generating a control signal for said drive means to move said camera into an axial position in which said first counting code matches said first identifying code, said first comparison means emitting an unblocking signal in the presence of such a match while arresting said drive means;

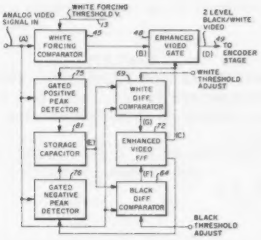
second comparison means connected to said selector means and to said second sensing means for receiving therefrom said second identifying and counting codes and for generating a trigger signal upon detecting a match thereof; and

activating means for said camera connected to both said first and said second comparison means for operation in the presence of said unblocking signal and in response to said trigger signal to reproduce on said receiver an image confronting said pick-up means.

3,868,477
FACSIMILE SYSTEM CONTRAST ENHANCEMENT

Howard Katzman, Santa Clara, Calif., assignor to Dacom, Inc., Sunnyvale, Calif.

Filed June 20, 1973, Ser. No. 371,748
Int. Cl. H04n *1/38*
U.S. Cl. 178—6 **10 Claims**



1. Apparatus for producing a binary signal output responsive to an analog signal input, said binary signal output in a first state serving as a black level decision output and in a second state serving as a white level decision output, comprising

means for producing a threshold level,

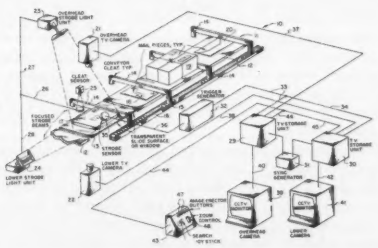
means for comparing the level of said analog signal input with said threshold level to produce one of said binary output states when said analog signal level is on one side of said threshold level and produce the other of said binary output states when said analog signal level is on the other side of said threshold level,

and means operative when said binary output is in one of said two different states for detecting a preselected change in the level of the analog input and for changing the binary output to the other of said two different states in response to said preselected change.

3,868,478
APPARATUS AND METHOD FOR SCANNING AND STORING INFORMATION LOCATED ON RAPIDLY MOVING ARTICLES

Michael N. Zeenkov, Potomac, Md., assignor to Fairchild Industries Inc., Germantown, Md.

Filed Aug. 24, 1973, Ser. No. 391,364
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **14 Claims**



1. Apparatus for scanning and storing information located on rapidly moving articles to be viewed comprising:

means for detecting the presence of a rapidly moving article to be viewed;

means activated by said detecting means for illuminating the rapidly moving article with a short duration flash of light;

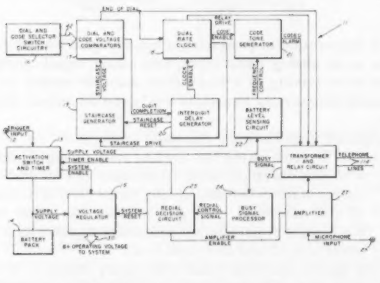
a television camera having a vidicon tube for viewing and for temporarily storing an image of the illuminating article;

separate storage means for receiving and storing the image of the illuminated article which has been temporarily stored by the vidicon tube of said television camera, said separate storage means having means for enhancing the imaging received from said television camera while not enhancing random noise associated with the image; and monitoring means having a screen for displaying the enhanced image stored in said separate storage means.

3,868,479
TELEPHONIC ALARM REPORTING APPARATUS

John C. Schweitzer, and Terry E. Tuttle, both of Grand Junction, Colo., assignors to Delta Products, Inc., Grand Junction, Colo.

Filed Oct. 30, 1972, Ser. No. 301,717
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **15 Claims**



1. Apparatus for telephonically reporting the occurrence of a selected event, such as an alarm condition, comprising:

input terminal means for receiving a trigger signal representing the occurrence of said selected event;

output terminal means for connection to a set of telephone lines;

means for supply operating voltage, said voltage supply means being responsive to and enabled by said trigger signal to supply operating voltage, said voltage supply means comprising battery means for supplying the operating voltage and including means for sensing the level of the operating voltage supplied and generating a frequency control signal whenever the operating voltage falls below a predetermined level;

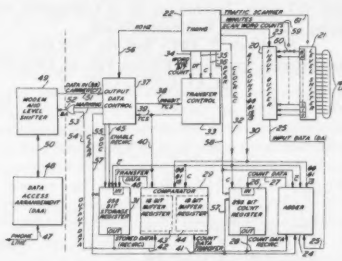
means connected to said output terminal means for dialing when activated a selected telephone number by generating dial pulses on a set of telephone lines connected to said output terminal means, said dialing means receiving its operating voltage from said voltage supply means to activate when said voltage supply means enables, said dialing means being operable to generate an end of dial signal to indicate that said telephone number has been dialed; and

means connected to said output terminal means for generating in response to said end of dial signal and audio alarm signal on a set of telephone lines connected to said output terminal means, said alarm signal generating means also being responsive to said frequency control signal indicating the fall of the operating voltage below said predetermined level to noticeably shift the tone of the audio alarm signal generated to indicate when said battery means are weak.

3,868,480
EVENT MONITORING TRANSCEIVER

Joseph M. Murgio, Clifton; Lawrence J. Pincus, Englishtown, and Guenter J. Boehm, Cherry Hill, all of N.J., assignors to Telesciences, Inc., Moorestown, N.J.

Filed Jan. 24, 1974, Ser. No. 436,082
Int. Cl. H04m *15/22*
U.S. Cl. 179—8 A **31 Claims**



1. Event monitoring transceiver apparatus comprising in combination

a. parallel to serial electrical signal input multiplexer means having an output circuit and a plurality of independent input circuits each cyclically selectively singly sequentially operatively coupled to said output circuit for a predetermined time interval to thereby deliver to said output circuit a sequence of electrical signals corresponding to the signal condition at each of said input circuits during the time interval that the particular selected input circuit is coupled to the said output circuit,

b. adder means and count register means, said adder means being operatively coupled to said count register means and to said multiplexer to receive the multiplexed output data from the latter and operative to increment the event data count in said count register for each multiplexer input circuit when the adder detects the occurrence of a valid event at the input circuit then selected,

c. comparator means and storage register means, said comparator means being operatively coupled to said count register and to said storage register for receiving and comparing the event count data in each for each of said input circuits and thereafter transmitting the event count data of larger magnitude to said storage register means,

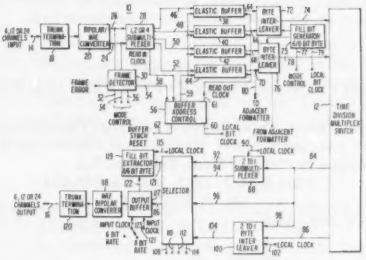
d. output control circuit means and output means operatively coupled to each other and to said storage register means, said output control circuit means being adapted for coupling to and for receiving transmission control signals from an output data transmission circuit and being adapted in response to the receipt of such transmission control signals to generate and transmit output control signals to said storage register effective to shift said event count data out of said storage register means and through said output means under control of said output control circuit means, said output means having an output circuit adapted for coupling to said output transmission circuit,

e. timing control means continuously generating timing control signals and operatively coupled to and sending timing control signals to all of said input multiplexer, adder, count register, comparator, storage register and output control circuit.

3,868,481
TRUNK FORMATTER

Bernard Eugene Patrusky, Dresher, Pa., and Alfred Mack, Camden, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,616
Int. Cl. H04j 3/04
U.S. Cl. 179—15 BV 11 Claims



1. A system for providing incoming digital signals to a time division multiplex switch from a trunk time division highway having said incoming digital signals in any one of a plurality of channel groupings and bit rates, said system comprising:

digital signal processing means connected between said trunk time division highway and said switch for grouping any one of said plurality of time division multiplexed channel groupings into a standard grouping compatible with said time division switch; and wherein

said digital signal processing means further comprises a digital storage means wherein said incoming digital signals are read into said storage means at times derived from the incoming digital signals and read out of said storage means at times derived from timing associated with said switch, said digital storage means comprising a plurality of elastic buffer delay units providing an initial predetermined buffer delay between read-in and read-out of said digital signals through said elastic buffer units and means for selectively resetting said initial predetermined buffer delay;

whereby said switch is provided with digital signals at said standard time division channel groupings and at a standard bit rate.

3,868,482
LINE SCANNING SYSTEM IN AN EXCHANGE CENTER

Jean Daniel Colas, Vence, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,449
Claims priority, application France, Dec. 29, 1971, 71.47912
Int. Cl. H04m 3/22
U.S. Cl. 179—18 FF 8 Claims

1. A method for collecting and processing information relating to the change of states of the lines provided in an exchange center, characterized in that:

the lines are classifeid in two classes (active lines and idle lines), a change of class being possible during the processing operation;

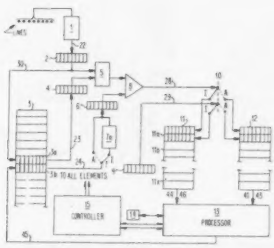
the lines are scanned and tested for state change in active lines in scanning phases recurrent at regular intervals, and the lines are scanned and tested for state change in idle lines in scanning periods recurrent at regular intervals;

the state change information waiting for processing and relating to the active lines and the state change information relating to the idle lines are stored into two different assemblies of memory positions, one said assembly defining a queue of active lines and the other defining a queue of idle lines, scanning periods being terminated without completion when said queue of idle lines is full,

at least said assembly for active lines having capability to buffer more than one change indication for the same line, and

the information is processed in accordance with rules giving priority to the information stored in the queue of the active lines,

whereby unprocessed information derived from a plurality of scans can be buffered and processed in an orderly manner.



3,868,483
SELF-LATCHING SECURITY DEVICE FOR PUBLIC COIN-OPERATED TELEPHONES

Paul A. Trimmer, Berkeley Heights, and Fred M. Cirule, Parsippany, both of N.J., assignors to Amerace Corporation, New York, N.Y.

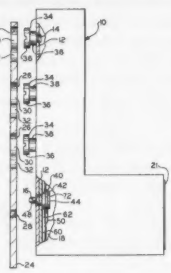
Filed June 20, 1973, Ser. No. 371,617
Int. Cl. H04m 1/04
U.S. Cl. 179—146 R 10 Claims

1. In a public, coin-operated telephone installation system wherein a telephone housing, having at least one aperture therein communicating with the interior and exterior thereof at a predetermined location in the housing and a coin compartment therein which is lockable to close-off access to said aperture through the interior of the housing, is secured to a mounting board by fasteners which are affixed to the housing, extend longitudinally to enter the mounting board, and secure the housing thereto upon relative lateral movement between the housing and the mounting board, said mounting board having an opening at a position corresponding to the location of the aperture in the housing when the housing is secured by

the fasteners to the mounting board, a self-latching security device comprising:

at least one latch pin; and

means for mounting the latch pin within the aperture of the housing for resilient deflection between an advanced position wherein the latch pin extends longitudinally from the housing for entering the corresponding opening in the mounting board, and a retracted position wherein the latch pin is retracted from said opening, with said mounting means resiliently biasing the latch pin toward the advanced position whereby the latch pin will be deflected to the retracted position by contact with the mounting board until relative lateral movement between the housing and the mounting board aligns the aperture with the opening to permit advancement of the latch pin to the advanced position and concomitant locking of the housing against further lateral movement relative to the mounting board.



3,868,484

POWER FEED ARRANGEMENT FOR COMMUNICATION SYSTEMS

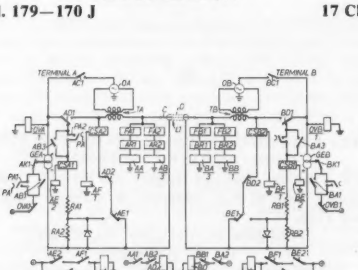
Leslie John Bolton, Kent, and Brian Hall, Copthorne, both of England, assignors to The Post Office, London, England

Filed Dec. 11, 1972, Ser. No. 313,677

Claims priority, application Great Britain, Dec. 15, 1971, 58244/71

Int. Cl. H04b *3/44*

U.S. Cl. 179—170 J **17 Claims**



1. A power feed arrangement for a communications system which includes two terminal stations; a transmission path connecting the terminal stations to transmit information signals from one of the stations to the other; a respective energizing current supply source at each station, and information signal repeating means connected in the transmission path and energizable by current supplied along the transmission path from the energizing current supply sources, said power feed arrangement including, at each station:

a monitoring signal generator operable to apply, to the transmission path, a monitoring signal which is to be transmitted to the other station,

a first detector connected to the transmission path to receive the monitoring signal transmitted to that station from the other station, said first detector being operable, in response to a failure to receive a monitoring signal from the other station, to disconnect the energizing current supply sources from the transmission path, and

a second detector connected to the transmission path to receive the monitoring signal applied to the transmission path at that station, the second detector being operable, in response to a failure to receive the monitoring signal applied at that station, to disconnect the energizing current supply sources from the transmission path.

3,868,485

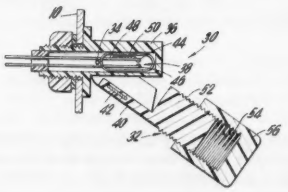
DENSITY SENSING PROBE SWITCH WITH ADJUSTABLE FLOAT

Donald J. Sykes, Upper Saddle River; Elias Papaconstantinou, Fort Lee, and Kenneth Murski, West Milford, all of N.J., assignors to Philip A. Hunt, Palisades, N.J.

Filed Sept. 7, 1972, Ser. No. 287,054

Int. Cl. H01h *36/02*

U.S. Cl. 200—61.2 **6 Claims**



1. A density sensing probe for controlling the operation of an electric device that maintains substantially constant density of a body of liquid the level of which is substantially constant, said probe comprising a support adapted to be at least partially disposed in the body of liquid, a body largely disposed below said support and in said liquid, means connecting said body to said support for guiding said body and its movement relative to said support, means to selectively adjust movement of the body in response to a change in the density of the liquid, said adjusting means being disposed on the periphery of the body, said periphery and said adjusting means including complimentary threaded portions, switch means responsive to a change in position of said body, an electrical device associated with said liquid the actuation of which reduces the density of the liquid, and circuit means connecting the switch means to the electrical device to actuate the electrical device when the body of liquid experiences an increase in density so as to lower the density and maintain the density substantially constant.

3,868,486

PUSH-BUTTON SWITCH HAVING IMPROVED LOCKING STRUCTURE TO INHIBIT WITHDRAWAL OF A SLIDABLE SWITCH BODY FROM ITS ASSOCIATED CASING

Kiyotaka Nakaya, Isezaki, Japan, assignor to Tokyo Hoshiden Kabushiki Kaisha, Gumma-ken, Japan

Filed Sept. 26, 1973, Ser. No. 401,009

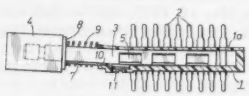
Claims priority, application Japan, Sept. 29, 1972, 47-113575

Int. Cl. H01h *13/04*

U.S. Cl. 200—159 R **8 Claims**

1. A push-button switch comprising a casing, a body inserted into the casing and biased in a direction to be withdrawn therefrom, contacts carried by that portion of the body which is located within the casing, a plurality of terminals

mounted within the casing for switching contact with the contacts upon movement of the body against said bias, a stop integrally formed with the body as a projection therefrom at a position forwardly of the terminals, a recess formed in the inner surface of the casing and in which the stop is receivedly engaged to prevent withdrawal of the body from the casing, a

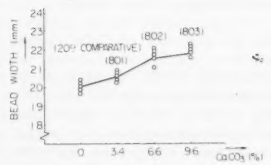


rib integrally formed on one surface of the body and extending lengthwise thereof, and a guide groove formed in the inner surface of the casing and extending from the forward end thereof for receivedly guiding the rib, said stop being formed on both lateral sides of the rib, and part of the guide groove being laterally extended to provide said recess.

3,868,487
SUBMERGED ARC WELDING METHOD AND FLUX CORED WIRE FOR USE IN SAME

Yoshinori Ito, Nishinomiya, and Mutsuo Nakanishi, Amagasaki, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 5, 1974, Ser. No. 440,128
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **7 Claims**



1. A flux cored wire for submerged arc welding which comprises in combination, a sheath formed of carbon steel or low alloy steel, and a flux filled within the sheath, said flux consisting essentially of 25–98%CaF_2, 0.1–25%Al, 0.8–15%Ti, 0.02–0.5%B, 0.8–15%Mo, 0–25%Ni, 0–15%Mn, and 0–70%Fe, all percentages by weight, the percentage of total weight of flux to weight of sheath material being 12–30%.

3,868,488
DEVICE FOR CONNECTING MINUTE DISTRIBUTING CIRCUIT ELEMENTS AND MINUTE CONNECTING WIRE ELEMENTS

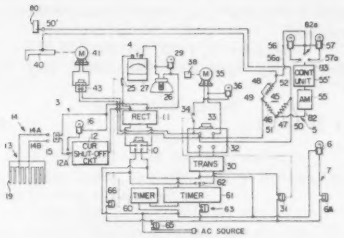
Toshihiko Kobayashi, Tokyo; Tetsusaburo Kamibayashi, Shinza; Satoshi Ichioka, Toda; Yukinori Matsushima, Tokyo; Norio Mitsumoto, Toda; Hirohisa Ono, and Kazuo Onishi, both of Tokyo, all of Japan, assignors to Mishima Kiesan Co., Ltd., Fukouka Prefecture, Japan

Filed Dec. 29, 1972, Ser. No. 319,713
Claims priority, application Japan, Dec. 31, 1971, 47-825
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 **1 Claim**

1. A device for connecting minute distributing circuit elements with minute connecting wire elements, comprising:

an insulation confirmation means comprised of a detection head, two lead wires and a signal means, said detection head being coupled to said signal means by said lead wires, said detection head having a plurality of electrodes arranged in parallel and spaced to correspond to the spacing between circuit elements, said plurality of electrodes being alternatively coupled to said lead wires, said signal means adapted to be actuated when a short circuit between lead wires is detected;

a connecting means for connecting the elements after testing by said insulation confirmation means and comprised of a heat radiation source for heating solder used to connect the elements, a vertically movable pressing plate for pressing the wire elements to the circuit elements, said pressing plate being positioned adjacent said heat radiation source and being heat transparent, and means coupled to said heat source for moving said heat source along

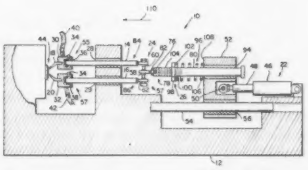


the elements being connected for proper heating; and an inspection means for inspection after said elements have been connected by said connecting means and comprised of a bridge circuit having two open terminals, a contact member connected with one open terminal of said bridge circuit and adapted to electrically contact all of said circuit elements via said pressing plate, a scanning member coupled to the other of said open terminals and adapted to sequentially scan the other ends of said circuit elements through said wire elements, and indication means coupled to said bridge circuit for indicating faultily connected wire elements, in response to the value of resistance between said terminals.

3,868,489
RESISTANCE WELDER

Clifton E. Ayers, New Whiteland, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 9, 1973, Ser. No. 414,315
Int. Cl. B23k *9/28*
U.S. Cl. 219—86 **5 Claims**



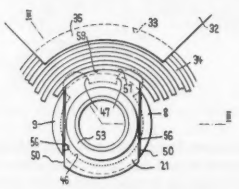
1. In an electric resistance welding apparatus of the type having a housing, two shanks axially movable along guides in said housing, welding electrodes connected to said shanks, and drive means for axially moving said shanks to advance said electrodes into contact with workpieces to be welded, the improvement which includes a universal force-equalizing means for dividing a force exerted by said drive means into two equal forces exerted on said shanks comprising

a. three ball joints;
b. a ball shaft passing through said ball joints, and
c. retention means retaining said ball joints on said ball shaft;
d. the centermost of said ball joints coupled to said drive means, and the outermost two of said ball housings connected to said shanks.

3,868,490
METHOD AND DEVICE FOR FIXING A WATCH BALANCE SPRING TO A COLLET

Jean-Philippe Aeschlimann, Lausanne; Pierre Moniier, Neuveville, and Jean Zaech, Bienne, all of Switzerland, assignors to Omega Louis Brandt & Frere S.A., Bienne and Alcyon Electronique et Physique S.A., Renens Canton of Biene, both of, Switzerland

Filed June 19, 1973, Ser. No. 371,413
Claims priority, application Switzerland, July 11, 1972, 10348/72
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 L **9 Claims**

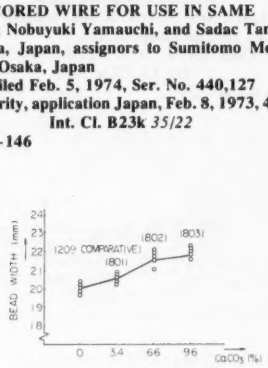


1. A method for fixing a watch-balance spring to its collet, comprising the steps of positioning the balance spring on the collet, partly pressing the coils of the balance spring in radial direction against a part of the collet for substantially uniformly engaging the area of a part of the end of a coil of the balance spring with a surface of the collet, welding by laser said part of the end of a coil to said collet with at least one welding spot, and releasing the balance spring from said radial pressure.

3,868,491
SUBMERGED ARC WELDING METHOD AND FLUX CORED WIRE FOR USE IN SAME

Yoshinori Ito; Nobuyuki Yamauchi, and Sadac Tanaka, all of Nishinomiya, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 5, 1974, Ser. No. 440,127
Claims priority, application Japan, Feb. 8, 1973, 48-15201
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **2 Claims**

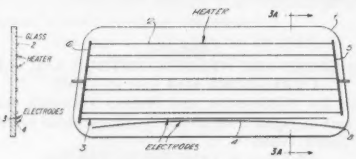


1. A flux cored wire for submerged arc welding which comprises in combination, a sheath formed of carbon steel or low alloy steel, and a flux filled within the sheath said flux consisting essentially of 25–95% CaF_2, 0.1–2.5%Al, 0.8–15%Ti, 0.02–0.5%B, 0.8–15%Mo, 0–25%Ni, 0–25%Se, 0–10%CeO_2 or CeF_3, 2–20%$CaCo_3$, and the balance Fe, all percentages by weight, the percentages of total weight of flux to weight of sheath material being 12–30 percent.

3,868,492
HEATED WINDOWS IN ROAD VEHICLES

John Crawshaw Taylor, Buxton, England, assignor to Tarka Controls Ltd., Derbyshire, England

Filed May 15, 1973, Ser. No. 360,434
Claims priority, application Great Britain, May 18, 1972, 23541/72; Feb. 6, 1973, 5736/73
Int. Cl. H05b *1/02*; **E06b** *7/12*; **Ho5b** *3/06*
U.S. Cl. 219—203 **7 Claims**



1. In a road vehicle having a window, an arrangement for reducing condensation upon the interior surface of said window including: a pair of extended linear electrodes arranged to extend across said window so as to be bridged resistively by condensation upon said surface, the electrodes being spaced from one another differently at different points along their length with the spacing being least in the region of the center of the window; a heating element comprising a plurality of generally parallel electrical resistance heating elements arranged for heating said surface; and an electronic switching circuit responsive to the resistance between said electrodes for energizing the heating element for so long as the resistance between said electrodes is lower than that characterizing a predetermined degree of condensation upon said surface; the differential spacing of the electrodes providing the arrangement with a differential sensitivity to condensation on different areas of the window surface.

3,868,493
METHODS OF INSTALLING AN ELONGATED, FLEXIBLE, ELECTRIC HEATER INTO A MATERIAL STORAGE TANK, AND HEATER CONSTRUCTION FOR THE SAME

Steven J. Caroleo, Coraopolis, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

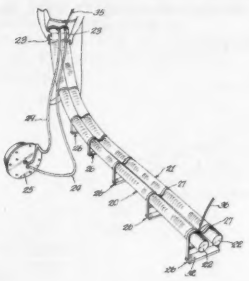
Division of Ser. No. 206,666, Dec. 10, 1971, Pat. No. 3,745,640. This application Mar. 16, 1973, Ser. No. 341,968
Int. Cl. H05b *1/00*
U.S. Cl. 219—318 **1 Claim**

1. An elongated electric heater adapted to be disposed within a large fluid storage tank through an opening in an upper portion of the tank and when so disposed having no mechanical connection with said tank, comprising:
a plurality of elongated metal sheaths disposed in side-by-side relation, each sheath being formed of flexible tubing.

such as corrugated metal tubing, so that said sheath may be freely bent through its longitudinal length whereby it may be manipulated for insertion through said tank opening to the interior of said tank,

an elongated flexible electric heating element positioned lengthwise within each of said sheaths, said heating element being electrically insulated from its sheath but permitted to flex therewith,

a plurality of supports connected to said metal sheaths at longitudinally spaced places, each support comprising a bracket portion connected to said sheaths and a foot portion spaced from said sheaths, each foot portion being adapted to rest on an interior lower wall surface of said tank to space said sheaths therefrom,



each bracket portion spanning said sheaths and providing pockets for receiving respective sheaths for holding them in predetermined spaced relation, a cross bar for each bracket portion, said cross bar spanning said sheaths for holding the same in said pockets, a bolt extending between a bracket portion and cross bar of at least one of said supports, and a flexible cable having one end anchored to said bolt,

each foot portion being weighted and said foot portions combining to act as weights to overcome any floating action of said heater within fluid in said tank and to cause said heater to gravitate to and remain on said lower interior wall surface of said tank.

3,868,494

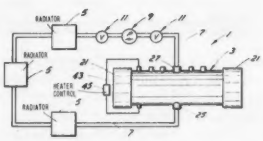
ELECTRIC SPACE HEATING SYSTEM

Armand Pepin, 14 Tutras Blvd., East Victoriaville, Canada

Filed Dec. 4, 1973, Ser. No. 421,677

Int. Cl. H05b *1/00*; **F24h** *3/06, 1/22*

U.S. Cl. 219—341 **2 Claims**



1. In a heating system including a heating tank, at least one radiator, conduit means connecting the tank and the radiator in a closed circuit, heat transfer liquid within the system, a pump in the conduit means to circulate the liquid through the closed circuit, said tank being elongated horizontally, at least one pair of elongated electrical resistance elements extending within the tank substantially at the same level above the bottom of the tank and terminating within the tank at substantially equal distances from the ends of the tank, the latter having a liquid inlet means at the bottom and a liquid outlet means at the top connected to the conduit means, the inlet and outlet means being located substantially midway between the ends of the tank and being substantially in vertical register, and first and second baffles located in the tank opposite and spaced from said inlet and outlet means, respectively, intermediate the same and said electrical resistance elements, said first baffle directing the liquid towards the ends of the tank and the second baffle preventing the liquid in the center zone of the tank from flowing directly towards said outlet means, said first and second baffles consisting of elongated plates terminating at substantially equal distances from the ends of the tank, whereby said liquid is caused to circulate in substantially two sets of symmetrical paths on both sides of the central zone of said tank between said inlet and said outlet means and at substantially uniform velocity over the length of said electrical resistance elements, thus preventing localized overheating of the liquid.

3,868,495

ELECTRIC HAIR DRYING DEVICE

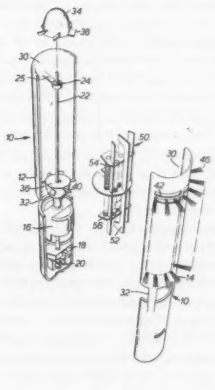
Hugh E. T. Dyer, Dorset, England, assignor to Firth Cleveland Limited, London, England

Filed Dec. 3, 1973, Ser. No. 421,112

Claims priority, application Great Britain, Dec. 2, 1972, 55789/72

Int. Cl. H05b *1/00*; **A45d** *20/10*

U.S. Cl. 219—368 **2 Claims**



2. In a blower device,

an elongate hollow casing comprising

a first substantially semi-cylindrical shell, and,

a second substantially semi-cylindrical shell,

said shells mating at their longitudinal edges,

a first fan impeller located adjacent one end of the casing and carried by said first shell independently of said second shell,

a second fan impeller spaced axially of the casing from the first fan impeller and carried by said one shell independently of said second shell,

the first and second fan impellers being arranged to produce opposed air flows within the casing,

said casing defining a first air inlet at one end, and

a second air inlet intermediate the length of the casing,

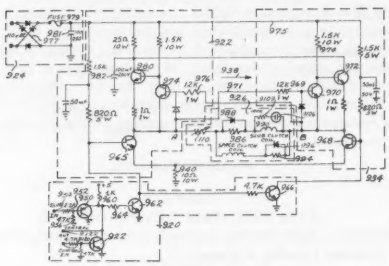
driving means for the impellers carried by said one shell independently of said second shell, and

said casing having an outlet for air flows produced by said fan impellers between the inlets.

3,868,496
CONTROL MECHANISM FOR PRODUCING RANDOM-LIKE EFFECTS ON TEXTILE MATERIALS

Charles D. Pugh, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 158,961, July 1, 1971, Pat. No. 3,748,648. This application May 15, 1973, Ser. No. 360,468
Int. Cl. H03k 21/36
U.S. Cl. 235—92 PE 2 Claims



1. A counting circuit comprising:

first counter means for providing at an output a first output signal upon each receipt of a given number of input signals,

second counter means connected to the output of said first counter means for receiving successive first output signals from said first counter means and providing, when an enabling input signal is provided at an enabling input, a second output signal at an output upon each receipt of a given number of said first output signals,

third counter means connected to the output of said first counter means for receiving successive first output signals from said first counter means and providing, when an enabling input signal is provided at an enabling input, a third output signal at an output upon each receipt of a predetermined number of said first output signals from said first counter means,

flip-flop means connected to the output of said second counter means and to said enabling inputs of said second and third counters for shifting from a first to a second output condition, whenever said second output signal is provided by said second counter means and said flip-flop means is in said first condition, to provide an enabling input signal to said third counter means and no input enabling signal to said second counter means

means connected to said flip-flop means for providing a signal for shifting said flip-flop means from said second to said first condition to provide an enabling input signal to said second counter means and no input enabling signal to said third counter means,

first switch means connected to said second counter means for manually varying said given number of received first output signals upon receipt of which said second counter means provides one of said second output signals,

second switch means connected to said third counter means for manually varying said predetermined number of received first output signals upon receipt of which said third counter means provides one of said third output signals,

third switch means connected to said first counter means for manually varying said given number of input signals upon receipt of which said first counter means provides one of said first output signals, said third switch means having a plurality of positions and

logic means connecting said third switch means to said first counter means and connected to said flip-flop means having, when enabled, a first condition, when said flip-flop means is in said first condition and said third switch means is set in a given position enabling said logic means, said first condition of said logic means causing said first counter means to produce said first output signal upon a first given number and a second condition, when said flip-flop means is in said second condition and said third switch means is set in that given position, and second condition of said logic means causing said first counter means to produce said first output signal upon a second given number different from said first given number.

3,868,497
TERMINAL AIRWAYS TRAFFIC CONTROL SYSTEM

Carl W. Vietor, 2116 Linda Flora Dr., Los Angeles, Calif. 90024

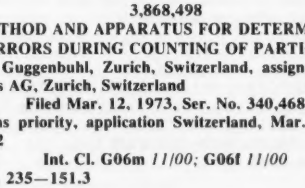
Continuation of Ser. No. 139,370, May 3, 1971, Pat. No. 3,758,765. This application Aug. 13, 1973, Ser. No. 387,930
Int. Cl. G06f 15/50
U.S. Cl. 235—150.27 23 Claims

1. In combination: aircraft borne instrumentation comprising, means generating an altitude signal, means generating a waypoint altitude signal, and telemetering means transmitting said aforementioned signals as in-flight navigational data; and a remote based computer comprising, telemetering means receiving said aforementioned signals, and position computer means relating said aforementioned signals and processing the same each according to its effect into a computed distance to said waypoint signal.

3,868,498
METHOD AND APPARATUS FOR DETERMINING ERRORS DURING COUNTING OF PARTICLES

Walter Guggenbuhl, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Mar. 12, 1973, Ser. No. 340,468
Claims priority, application Switzerland, Mar. 29, 1972, 4739/72
Int. Cl. G06m 11/00; G06f 11/00
U.S. Cl. 235—151.3 11 Claims



7. An apparatus for determining errors during counting of particles, comprising a particle detecting device for producing electrical pulses to be counted during throughpassage of the particles, a summation counter for counting said electrical

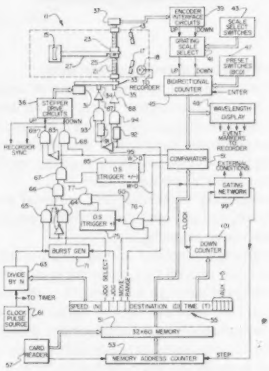
pulses, time transmitter means with switch-in and switch-out signal transmitter means for limiting the measuring time, a further switching signal transmitter means for dividing the measuring time into two parts, a differential control counter connected in circuit with the switch-in and switch-out signal transmitter means in such a manner that the switch-in signal transmitter means, apart from placing into operation the summation counter, also starts the differential control counter, said further switching signal transmitter means controlling the differential control counter to count backwards and the switch-out signal transmitter means switching off both said counters.

3,868,499

SPECTROMETRIC APPARATUS

Charles D. Aaronson, Acton; John F. Rendina, Boxborough, and Robert D. Fancy, Oakdale, all of Mass., assignors to GCA Corporation, Bedford, Mass.

Filed Mar. 25, 1974, Ser. No. 454,589
Int. Cl. G01j *3/06*; G06f *1/00*
U.S. Cl. 235—151.35 **9 Claims**



1. Spectrometric apparatus comprising:

means for analyzing radiation as a function of wavelength including stepping motor means for varying the wavelength, said analyzing means having means for providing up/down pulses corresponding to changes in the setting of said analyzing means;

an up/down counter responsive to said up/down pulses for varying the count held by said counter in correspondence with changes in the wavelength setting of said analyzing means;

addressable memory adapted to hold a plurality of multi-bit digital words;

a destination register which can be loaded from said memory;

a comparator interconnected with said counter and said destination register and operative to provide a coincidence signal when the values in said counter and destination register are equal and a direction signal indicating which of said values is larger if they are not equal;

a rate register which can be loaded from said memory;

a source of clock pulses at a predetermined frequency;

a divider circuit interconnected with said rate register and driven from said clock pulse source for providing driving pulses at a rate which is related to said predetermined frequency by a factor corresponding to the value held in said rate register; gating means interconnected with said comparator means for applying said driving pulses to said stepping motor in a sense controlled by said direction signal, the application of driving pulses being terminated when the values held in said counter and said destination register are equal; and

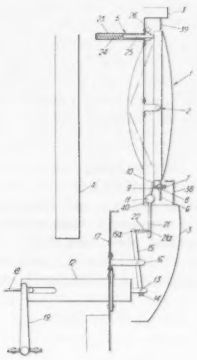
means for loading said registers with values determined by respective portions of a word held in said memory, the words in the memory being sequentially addressed thereby to direct said analyzing means in the performance of a sequence of scanning operations.

3,868,500

SELF-LEVELLING LAMPS

Frederick Raymond Patrick Martin, 19 Hope Park, Bromley, Kent, England

Continuation of Ser. No. 51,139, June 30, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 328,057
Claims priority, application Great Britain, July 1, 1969, 33293/69; Apr. 22, 1970, 19361/70
Int. Cl. B60g *1/10*
U.S. Cl. 240—7.1 LJ **7 Claims**



1. In a lamp self-levelling system comprising front and rear vehicle body angle signal generating means, and a lamp tilting linkage connected to at least one lamp to be levelled; signal mixing means operably connected to said vehicle body angle signal generating means and said lamp tilting linkage; a pair of springs in said mixing means operably connecting the lamp tilting linkage with respective ones of the front and rear body angle signal generating means; adjuster means in at least one of said front and rear body angle signal generating means for initially prestressing said springs; and indicator means responsive to the strain of said springs for indicating when the prestressing of said springs by said adjustor means has attained a strain value equivalent to a predetermined operating stress value.

3,868,501

LIGHT BOXES WITH FRESNEL LENSES

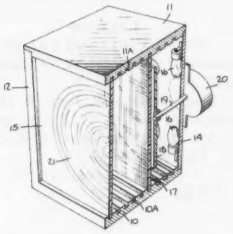
Roberto Barbour, Roslyn Harbor, N.Y., assignor to Cryton Optics, Inc., Roslyn, N.Y.

Filed May 16, 1973, Ser. No. 360,688
Int. Cl. F21p *5/04*
U.S. Cl. 240—10.1 **3 Claims**

1. A light box adapted to produce continuously changing decorative patterns on a viewing screen, said box comprising: A. An enclosure having a front panel fabricated of clear plastic material having a series of concentric prismatic grooves formed on one face thereof to define a Fresnel lens serving as a viewing screen;

B. A light source disposed within said enclosure to produce rays directed toward said front panel, and;

C. a light modifying element interposed between said source and said screen, said Fresnel lens screen functioning to condense and magnify the modified light rays passing through said element whereby the resultant pattern presented on the screen and directly viewable thereon represents the interaction of said light modifying element and said lens and is brilliantly illuminated, said light modifying element including a rotating disc of transparent material which is formed to disperse light passing therethrough and a panel intermediate said disc and said front panel, said intermediate panel having a pebble-like surface defining a multitude of miniature lenses to disperse light.



3,868,502

LUMINAIRE

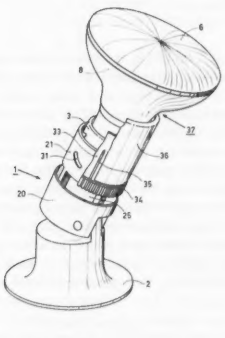
Aloysius Jacobus Maria Beeren, and Henricus Karel Jozef Stoffelen, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,705

Claims priority, application Netherlands, Nov. 29, 1972, 7216165

Int. Cl. F21v *7/00*

U.S. Cl. 240—44.1 **1 Claim**



1. A luminaire comprising:

a cylindrical tub having walls a longitudinal axis, and an end wall, said end wall having a vent opening therethrough;

a member secured interiorly of the tub, having a central portion on which a lampholder is mounted, said member comprising a cylindrical side wall having vent holes therein, said side wall being coaxial with the tub;

a base having a first portion for attachment to a structure and a second portion connected to said first portion for pivotal movement of less than approximately 360° about a base axis;

hinge means for pivotal connection of said tub to said second portion, said hinge having a pivotal hinge axis, said hinge means being so disposed between said end wall and said base that, at a first pivotal position, said tub axis and said base axis are coaxial, said hinge axis being displaced radially from said tub and base axes; and

external socket means surrounding a portion of the side wall of said member and mounted thereon for axial movement along said member, for supporting and positioning focusing devices and protective shields on the luminaire.

3,868,503

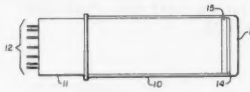
MONOCHROMATIC DETECTOR

Myer Geller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1973, Ser. No. 354,716

Int. Cl. H01j *31/50*

U.S. Cl. 250—213 R **6 Claims**



1. A monochromatic detector comprising:

a layer of non-thermal, photo-responsive material positioned to receive the radiant energy to be detected,

said photo-responsive material having a sharp-cut-off sensitivity characterized by rapidly decreasing response to light energy relative to wavelength at the upper limit of a preselected spectral region; and

a layer of insulating semiconductor material positioned to intercept said radiant energy before its reception by said photo-responsive material,

said semiconductor material having a sharp turn-on transmissivity characterized by rapidly increasing transmission of light energy relative to wavelength at the lower limit of said preselected spectral region, defining a narrow band pass of substantially monochromatic wavelengths between said cut-off sensitivity and said turn-on transmissivity of said preselected spectral region.

3,868,504

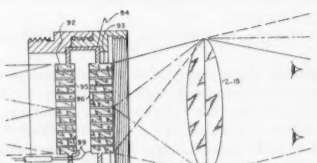
MODULAR BIOCULAR EYEPIECE FOR THERMAL IMAGE SYSTEMS

David K. Anderson, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1973, Ser. No. 399,016

Int. Cl. H01j *29/18, 31/26, 31/50*

U.S. Cl. 250—213 VT **5 Claims**



1. A low gain image intensifier comprising:

a pair of thin transparent backing plates disposed in parallel with first and second opposed surfaces spaced apart less than one millimeter;

a photocathode and covering to said first surface;

an electro-luminescent phosphor screen and covering to said second surface first and second thin conductive layer means attached to and covering said screen and said photocathode to reflect light and provide a barrier to ions incident thereon;

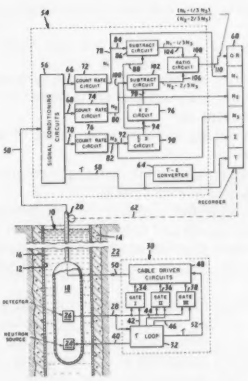
a closure member sealed to the entire perimeter of each plate as the sole means of support and separation of said plates whereby only a hard vacuum is maintained between said plates; and

a pair of electrodes insulated from one another attached to said first and second thin conductive layers, respectively, and sealed through said closure member.

3,868,505
METHOD AND APPARATUS FOR INVESTIGATING THE QUALITY OF WELL LOGGING DATA

Larry A. Jacobson, Houston; Warren B. Wall, Pasadena, and Charles Wilkin Johnstone, Houston, all of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,189
Int. Cl. G01v *5/00*
U.S. Cl. 250—269 **21 Claims**



1. A method of investigating earth formations traversed by a borehole, comprising:

moving through the borehole a well tool of the type including a neutron source for repetitively irradiating an earth formation with pulses of neutrons and at least one radiation detector spaced from the neutron source for generating signals representative of the resulting neutron populations between pulses in the formation opposite said one detector;

deriving a measurement in the well tool of a characteristic of the formation from said one radiation detector signals;

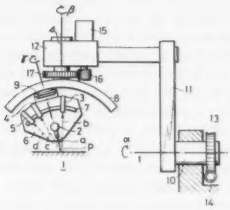
transmitting to the earth's surface a signal representative of said formation characteristic measurement and signals representative of at least selected portions of said one radiation detector signals; and

deriving a representation at the earth's surface from representations of said transmitted detector-related signals which is functionally related to at least one of the quality of said formation characteristic measurement and the quality of transmission of said detector-related signals.

3,868,506
X-RAY DIFFRACTION INSTRUMENT

Katsuhiko Ogiso, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan

Filed July 30, 1973, Ser. No. 383,611
Claims priority, application Japan, Feb. 20, 1973, 48/19,797
Int. Cl. G01n *23/20*
U.S. Cl. 250—278 **3 Claims**

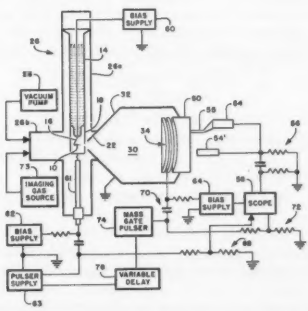


1. An x-ray diffraction instrument comprising a mount for an x-ray source; an x-ray source constructed and arranged on said mount; a first circular guide rail constructed and arranged on said mount; said first circular guide rail having its center aligned with a point where an x-ray from said source is incident on a specimen; a plurality of detectors for detecting diffracted x-ray arranged on said first circular guide rail; a second circular guide rail having its center aligned with said x-ray incident point; a support for supporting said mount to rotate said mount around an axis aligned with the direction of x-ray incident onto the specimen, said support being movable along said second circular guide rail; means for holding said circular guide rail to rotate said second rail around an axis formed by a vertical straight line passing through said x-ray incident point; and a shaft for carrying said means to rotate said holder around an axis formed by a horizontal straight line intersecting said vertical straight line at said x-ray incident point.

3,868,507
FIELD DESORPTION SPECTROMETER

John A. Panitz, Edgewood, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 5, 1973, Ser. No. 422,048
Int. Cl. H01j *39/34*
U.S. Cl. 250—287 **12 Claims**



1. A spectrometer for detecting and indentifying ions in a diverging generally conical ion beam field desorbed from a specimen surface, comprising a vacuum chamber having electrically conductive walls surrounding an ion source section and a detector section; said ion source section including means for supporting said specimen, means for coupling a

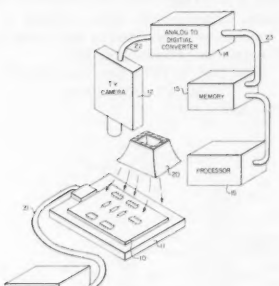
constant voltage to said specimen through said supporting means, an electrode adjacent said specimen having an aperture aligned therewith for emission and conical definition of ions from said specimen, and means for coupling an ion desorption field to said specimen through said electrode opposite in polarity from said constant voltage for thus providing a beam of ions from said specimen surface diverging in a cone-shape through said aperture; an electrically conductive wall portion intermediate said ion source section and said detector section and spaced from said electrode, said conductive wall portion having an aperture aligned with said specimen and said first mentioned aperture of size no less than that of said first mentioned aperture and no greater than outer margins of said ion beam as defined by said first mentioned aperture; said detector section including a channel electron multiplier array means disposed in registry with each of said apertures and said ion beam as defined thereby and impervious to direct passage of ions in said ion beam for producing and multiplying electrons in response to said ions at locations where said ions strike said array, said array means being spaced equidistant from said specimen for all paths of travel of ions in said ion beam, phosphor means for sensing means multiplied electrons adjacent said locations, said array means having sufficient gain to detect ions from said specimen surface, and means responsive to said sensing means for identifying ion species in said ion beam; means for coupling said chamber to a vacuum pump; and means for connecting said chamber walls and said electrically conductive wall portion to ground potential to provide shielding for said ions and an ion drift region between said electrically conductive wall portion and said channel electron multiplier array means.

3,868,508

CONTACTLESS INFRARED DIAGNOSTIC TEST SYSTEM

Raymond A. Lloyd, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1973, Ser. No. 411,110
Int. Cl. G01j *5/10*
U.S. Cl. 250—330 **9 Claims**



1. A method for inspecting a member of a class of related device to determine its operational status, comprising the steps of:

a. scanning the infrared pattern generated by a reference member of said class of related devices with an infrared detector to generate a reference signal indicative of the infrared radiation emitted by said reference member;

b. scanning the infrared pattern generated by the member to be inspected with an infrared detector to generate a test signal indicative of the infrared radiation emitted by said member;

c. comparing said reference and test signals to identify difference therebetween;

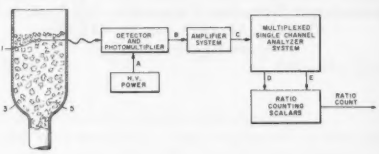
d. statistically analyzing said difference to determine if said member to be inspected in operating within prescribed limits.

3,868,509

METHOD OF STABILIZING SINGLE CHANNEL ANALYZERS

George E. Fasching, and George H. Patton, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior

Filed Dec. 5, 1973, Ser. No. 422,052
Int. Cl. G01t *1/20*
U.S. Cl. 250—336 **8 Claims**



1. A method for stabilizing the analog output signals from two single channel analyzers that are to be fed to a comparator comprising the steps of:

detecting an analog signal representative of some physical phenomenon;

amplifying said representative signal and transmitting the result to a multiplexer system;

splitting said amplified signal in the multiplexer system into two analog signals and sending each signal to one of two separate single channel analyzers that output fixed pulses and normally operate between different specific output ranges;

switching and gating the outputs from said single channel analyzers so that each analyzer alternately operates at one of two outputs with the same specific range output signals always appearing at the same gate output; and

comparing the outputs from the gating circuitry after switching and gating takes place to obtain the desired results.

3,868,510

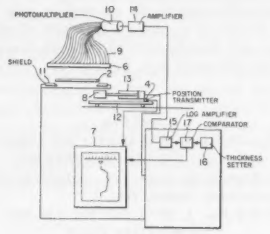
METHOD FOR SENSING PROFILE OF SHEET OR PLATE MATERIALS

Yuuji Murata; Yoshinori Mashiko; Yukio Uchida, and Mitsuru Matsumoto, all of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,992
Claims priority, application Japan, Dec. 29, 1971, 47-2935
Int. Cl. G01t *1/20*
U.S. Cl. 250—366 **5 Claims**

1. A method for sensing the profile of sheet material wherein the thickness of said sheet material is measured by measuring the penetration damping of an amount of radiation being emitted from radiation generating means located on one side of said sheet material with the decrease in radiation due to penetration within the sheet material being sensed by radiation detecting means located on the opposite side of said sheet material, said method comprising the steps of moving said radiation generating means at a relatively high speed to rapidly scan said sheet material in a crosswise direction of the material and simultaneously maintaining said radiation detect-

ing means stationary in a position wherein said detecting means extends for the entire width of the sheet material being

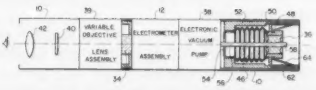


scanned by said radiation generating means thereby to sense the profile of said material.

3,868,511
DOSIMETER LATCH

Michael J. Basso, West Allenhurst, and Stanley Kronemberg, Skillman, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 4, 1974, Ser. No. 457,870
Int. Cl. G01t *1/14*
U.S. Cl. 250—376 **3 Claims**



1. In combination with a pen size dosimeter in a cylindrical barrel of the type that has an electrometer designed for response to neutron and gamma radiation and that is included in an hermetically sealed assembly that has a light path that extends through the electrometer, the sealed assembly being closed by a window at each end, the dosimeter including a calibrated reticle adjacent one window in line with the light path enabling one to read radiation dose, the hermetically sealed assembly also including longitudinally displaceable conductor means sealed into and projecting through the other window for coupling a charging source to the electrometer, said other window being in a frame that is yieldably supported in a bellows that is part of the sealed assembly and that is spring biased to expand and carries the conductor means out of coupling engagement with the electrometer, the improvement which comprises latching means for preventing longitudinal displacement of the conductor means when the dosimeter is not being charged.

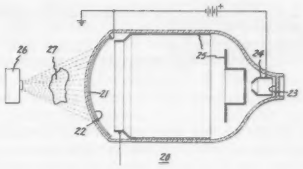
3,868,512
COMPOSITE INPUT SCREEN FOR X-RAY IMAGING DEVICES

Jerome S. Prener, and Stanley J. Lubowski, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,960
Int. Cl. H01j *1/62*
U.S. Cl. 250—483 **9 Claims**

1. An improved screen for x-ray imaging devices comprising:

a wafer comprising a high density, high conversion efficiency phosphor powder bonded together with doped CsI;

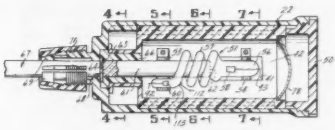


said doped CsI forming approximately 60–80 percent by volume.

3,868,513
ULTRAVIOLET RADIATION PROJECTOR

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research and Development Corporation, Milford, Del.

Filed Dec. 26, 1972, Ser. No. 318,251
Int. Cl. H01j *37/00*
U.S. Cl. 250—504 **5 Claims**



1. An ultraviolet radiation projector comprising a radiation collecting rod, a gas discharge tube including a first section aligned and substantially coaxial with the radiation collecting rod and a section diverging from the first section, wherein the diverging section is helically wound around the collecting rod, a cathode of the gas discharge tube being mounted in the first section, there being a window in the gas discharge tube at the juncture between the sections extending transversely of and adjacent to an end of the radiation collecting rod, said end of the radiation collecting rod extending transversely of the axis thereof, a radiation piping rod means receiving radiation from the radiation collecting rod, radiation discharge means on the radiation piping means, and means for energizing the gas discharge tube to cause projection of ultraviolet radiation through the window into the radiation collecting rod to be discharged through the radiation discharge means.

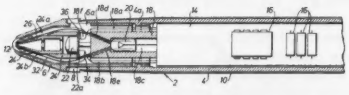
3,868,514
HANDHELD READING DEVICE

Rolf B. E. Israelsson, Solna, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden

Filed Sept. 24, 1973, Ser. No. 399,971
Claims priority, application Sweden, Oct. 19, 1972, 13501/72
Int. Cl. G01n *21/30*; G02b *5/14*; G06k *7/00*
U.S. Cl. 250—566 **11 Claims**

1. Handheld reading device for optical reading of markings on a data record, comprising a light-proof casing having an opening therein facing the data record, light from light source means within or outside the casing being transmitted to the data record through said opening and light reflected from the data record being transmitted back through said opening to light receiving means within said casing, characterized in that between said opening and said light receiving means there are at least two apertures a first of which being arranged adjacent to said opening and having a size which is less than the open-

ing, and a second of which being arranged between the first aperture and the light receiving means and having a size which exceeds the size of the first aperture, but is less than the sec-



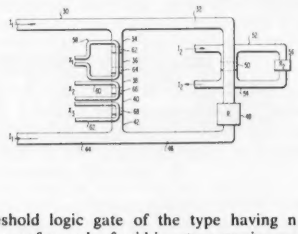
tional area limited by the inner surfaces of the walls surrounding the apertures at least at some location between the apertures, and that the light beam remains unrefracted from said first aperture to said light receiving means.

3,868,515

JOSEPHSON DEVICE THRESHOLD GATES

Bernard S. Landman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,811
Int. Cl. H03k *19/02, 19/20, 3/38*
U.S. Cl. 307—212 **6 Claims**



1. A threshold logic gate of the type having n inputs, weighting means for each of said inputs, summing means and threshold means, the improvement comprising:

a. a plurality of series connected Josephson devices of the type which have zero voltage there-across when the current therethrough is below a critical current and a finite well-defined voltage, Δ, there-across, when the current equals or exceeds the critical current,

b. input control lines each associated with specific ones of said series connected Josephson devices and positioned to provide a magnetic field to change the critical current of said specific ones of said devices,

c. means for applying a gating current to said series connected Josephson devices, said gating current having a Josephson between the critical current values which would be established by first and second current values applies to any of said input control lines, wherein each said input control line is adapted to carry a logic 0 current of value I_c and a logic 1 current of value I_c , where I_c I_c , and wherein said currents I_c and I_c cause the specific Josephson devices associated with said control lines to have critical currents of I_m and I_m , respectively, I_m I_m , and wherein said gating current applied to said series connected Josephson devices has a value I_1 which is less than I_m and equal to or greater than I_m , wherein the voltage across said series connected Josephson devices equals $m\Delta$, *where* Δ *is the voltage across an individual Josephson device which has been switched from* $V = 0$ to V 0, and where m is the number of said series connected Josephson devices associated with input control lines carrying currents of value I_c .

d. a resistance, R, connected in a current path in parallel with said series connected devices,

e. a further Josephson device positioned to be influenced by the magnetic field caused by current flowing in said parallel current path,

f. means for applying a gating current to said further Josephson device whereby the switching of said further Josephson device from a zero voltage depends upon the current value in said alternate path, and

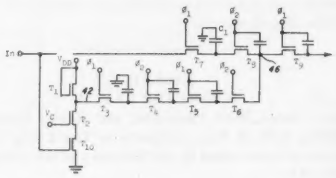
g. means electromagnetically coupled to said further Josephson device for varying the threshold of said threshold logic gate and thereby altering the logic function carried out by said threshold logic gate.

3,868,516

DISPERSION COMPENSATED CIRCUITRY FOR ANALOG CHARGED SYSTEMS

Dennis Darcy Buss, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,347
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 R **3 Claims**



1. A charge transfer device analog matched filter comprising:

an analog shift register having a plurality of storage nodes, said shift register characterized by a determinable charge transfer dispersion;

means for simultaneously detecting the signal at each of said storage nodes, said signal characterized by charge transfer dispersion components;

dispersion correction means including first signal weighting means connected to said detection means, said filter signal weighting means effective to substantially cancel said charge transfer dispersion components of said detected signals to provide substantially dispersion free signals;

second signal amplitude weighting means connected to said dispersion filter for selectively weighting the signal amplitudes of said dispersion free signals to define a preselected filter function; and

means for summing said dispersion free weighted signals to provide a correlated output signal substantially free from dispersion.

3,868,517

LOW HYSTERESIS THRESHOLD DETECTOR HAVING CONTROLLED OUTPUT SLEW RATE

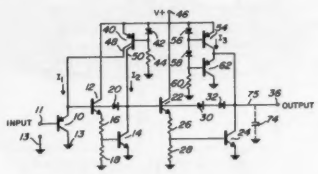
John A. Schoeff, Mesa, Ariz., assignor to M torola, Inc., Chicago, Ill.

Filed June 15, 1973, Ser. No. 370,517
Int. Cl. H03k *5/153, 5/08, 3/295*
U.S. Cl. 307—235 R **21 Claims**

21. A magnitude responsive circuit providing an output signal at an output terminal thereof having one magnitude in response to the magnitude of an input signal applied to an input terminal thereof passing through a threshold level in a first direction and an output signal at said output terminal thereof having another magnitude in response to said input signal applied to said input terminal passing through said threshold level in a second direction, the magnitude responsive circuit sinking a substantially constant amount of current regardless of the magnitude or direction of the input signal and including in combination:

first current supply means adapted to supply a constant current at an output terminal thereof;

first current sinking means havng a control electrode connected to the input terminal of the magnitude responsive circuit, a first electrode connected to the output terminal of said first current supply means and a second electrode, said first current sinking means being responsive to the magnitude of the input signal passing through said threshold level in one of the first and second directions to be rendered conductive to sink said current from said first current supply means, said first current sinking means being responsive to the magnitude of the input signal passing through the threshold level in the other of the first and second directions to be rendered nonconductive;



second current sinking means having a control electrode connected to said output terminal of said first current supply means and a first electrode, said second current sinking means being rendered nonconductive in response to said first current sinking means being conductive, said second current sinking means being rendered conductive in response to said first current sinking means being rendered nonconductive to sink said constant current from said first current supply means;

second current supply means adapted to supply a constant current at an output terminal thereof;

third current sinking means having a control electrode coupled to said first electrode of said second current sinking means, a first electrode and a second electrode connected to said output terminal of said second current supply means, said third current sinking means being rendered conductive in response to said second current sinking means being conductive, said third current sinking means being rendered nonconductive in response to said second current sinking means being rendered nonconductive to sink said constant current from said second current supply means;

fourth current sinking means having a control electrode connected to said second electrode of said third current sinking means, a first electrode and a second electrode, said fourth current sinking means being rendered conductive in response to said third current sinking means being rendered nonconductive to sink said constant current of said second current supply means and said fourth current sinking means being rendered nonconductive in response to said third current sinking means being rendered conductive;

third current supply means adapted to supply a constant current at an output terminal thereof;

fifth current sinking means having a control electrode coupled to said first electrode of said fourth current sinking means, a first electrode and a second electrode connected to said output terminal of said third current supply means, said fifth current sinking means being rendered conductive in response to said fourth current sinking means being rendered conductive to sink said constant current from said third current supply means, said fifth current sinking means being rendered nonconductive in response to said fourth current sinking means being rendered nonconductive;

power supply means having a reference electrode coupled to said second electrode of said first current sinking means and to said first electrode of said second, third, fourth and fifth current sinking means and having an output terminal;

sixth current sinking means having a control electrode coupled to said output terminal of said power supply means, a second electrode connected to said second electrode of said fifth current sinking means and a first electrode connected to said reference terminal of said power supply means, said sixth current sinking means being rendered nonconductive in response to said fifth current sinking means being rendered conductive, said sixth current sinking means being rendered conductive in response to said fifth current sinking means being rendered nonconductive to sink said constant current from said third current supply means; and

an output terminal of said magnitude responsive circuit connected to said second electrode of said fifth current sinking means.

3,868,518

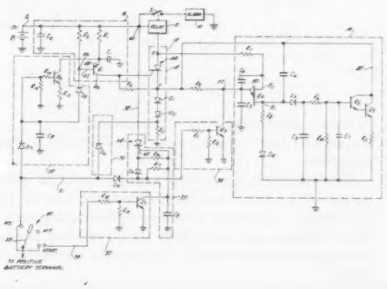
AUTOMOBILE THEFT ALARM WITH IGNITION CONTROLLED AUTOMATIC ARMING MEANS

Rudor M. Teich, 6040 Blvd. East, West New York, N.J. 07093

Division of Ser. No. 217,181, Jan. 12, 1972, Pat. No. 3,740,713, which is a continuation-in-part of Ser. No. 86,222, Nov. 2, 1970, Pat. No. 3,671,934. This application Dec. 4, 1972, Ser. No. 311,938

Int. Cl. H03k *5/153*

U.S. Cl. 307—268 **17 Claims**



1. A pulse generator having an initial time delay and adapted to provide, following said time delay, a pulsating switching action to provide pulsed actuation of an electrical element, comprising a voltage source, first switch means operatively connected in series with said electrical element between said voltage source and a reference voltage node, second switch means connected in series with said electrical element between said voltage source and ground, said second switch means having a control terminal, first and second resistors, a first junction node connected to said reference voltage node through said first resistor, a second junction node connected to said electrical element and said second switch means at the series connection therebetween through said second resistor, a first capacitor operatively connected between said first and second junction nodes and capacitively coupling same, a second capacitor operatively connected between said first junction node and ground, third switch means responsive to the voltage at said first junction node and adapted, upon increase of the voltage thereat to a predetermined level, to conductively connect said first and second junction nodes to the control terminal of said second switch means, thereby to render said second switch means conductive, whereby upon the closing of said first switch means said first junction node is charged through said first resistor to said predetermined voltage level during a first time interval defining said initial delay, at which time said third switch means operatively connects said control terminal of said second

switch means to said voltage source to actuate same, thereby producing a large current through said electrical element and shunting said first resistor, whereupon the voltage at said first junction node falls below said predetermined level and said third switch means is rendered nonconductive disconnecting the control terminal of said second switch means from said voltage source to render said second switch means nonconductive thereby terminating said large current and beginning a new cycle, said first junction node thereafter being rapidly charged to said pedetermined level, at least in part by the capacitive coupling of said first capacitor.

3,868,519
DATA TRANSMISSION SYSTEMS AND COMPONENTS THEREFOR

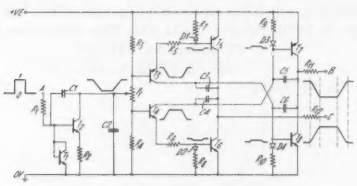
Douglas Green, 33 Wansheck Ave., North Shields, England

Filed May 9, 1973, Ser. No. 358,805

Claims priority, application Great Britain, May 11, 1972, 22174/72

Int. Cl. H03k *1/12, 4/50*

U.S. Cl. 307—270 **8 Claims**



1. A data transmission system comprising:

a. a source of binary data signals of substantially rectangular waveform;

b. a line driver circuit having a single input to which the output of the signal source is connected and having first and second outputs at which complementary output signals of trapezoidal waveform are developed in response to a signal of substantially rectangular waveform at said input;

c. a balanced pair transmission line having a pair of inputs respectively connected to said first and second outputs of said line driver circuit, and having a pair of outputs; and

d. a line receiver circuit having first and second inputs respectively connected to said pair of outputs of said transmission line; and having an output at which a signal of substantially rectangular waveform is developed in response to signals of trapezoidal waveform at said first and second inputs.

3,868,520
TURBINE-GENERATOR WATER-COOLED ROTOR SHAFT LINER RESTRAINT

Little P. Curtis, Monroeville, and Paul R. Heller, Murryville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1974, Ser. No. 434,755

Int. Cl. H02k *1/32*

U.S. Cl. 310—61 **10 Claims**

1. A rotor for a dynamoelectric machine comprising:

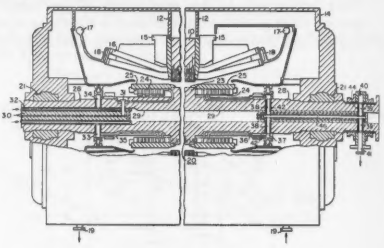
a body portion having windings thereon, said windings having passages for circulation of a fluid coolant therethrough;

a shaft portion having a central axial bore extending therethrough, said shaft having a coolant collection chamber and a coolant discharge chamber thereon, said coolant discharge chamber being axially spaced from said coolant collection chamber,

said shaft having a radial passage therein, said radial passage connecting said coolant collection chamber to said axial bore, said radial passage having a corrosion resistant liner extending therethrough,

said shaft having a radial conduit therein, said radial conduit connecting said coolant discharge chamber to said axial bore, said radial conduit having a corrosion resistant liner extending therethrough;

means for connecting said windings passages to said coolant collection chamber;



a corrosion resistant bore liner extending through said axial bore, said corrosion resistant liner being closed at both ends thereof and connected to and communicating with said corrosion resistant liners extending through said radial passage and said radial conduit;

a bracing member axially surrounding said bore liner; and,

means for pre-stressing said bore liner against said bracing member.

3,868,521
TACHOMETER GENERATOR

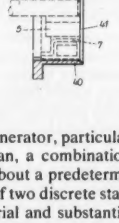
Volker Schlicker, St. Georgen, and Gunter Wrobel, Villingen, both of Germany, assignors to Papst-Motoren KG, St. Georgen im Schwarzwald, Germany

Filed Sept. 25, 1972, Ser. No. 292,246

Claims priority, application Germany, Sept. 25, 1971, 2147982

Int. Cl. H02k *1/12*

U.S. Cl. 310—257 **12 Claims**



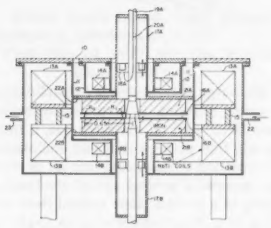
1. In a tachometer generator, particularly for controlling the motor of an electric fan, a combination comprising a rotor mounted for rotation about a predetermined axis; and a claw-pole stator comprised of two discrete stator sections consisting of ferromagnetic material and substantially mirror symmetrical to each other with reference to a plane located between said sections, each stator section being comprised of a substantially disk-shaped central portion oriented normal to said axis, and each stator section being furthermore comprised of stator claw poles integral with the respective central portion and extending in direction parallel to said axis, said two stator sections being arranged adjacent each other in direction parallel to said axis with the claw poles of said two stator sections being interdigitated and defining an annular cage, and said stator sections being angularly offset relative to each other by a distance corresponding to half the distance between the centers of neighboring claw poles of a stator section, and said

claw-pole stator further including a stator winding wound in said annular cage, wherein each of said disk-shaped portions is provided with a plurality of pairs of holes having their centers located at a predetermined distance from the axis of the respective section, one hole of each pair of holes in one of said disk-shaped portions being in register with the other hole of a pair of holes in the other disk-shaped portion, said stator further comprising fastener means extending through the registering holes of said disk-shaped portions to secure said sections to each other.

3,868,522
SUPERCONDUCTING CYCLOTRON

Clifford B. Bigham, and Harvey R. Schneider, both of Deep River, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Nov. 26, 1973, Ser. No. 419,034
Claims priority, application Canada, June 19, 1973, 174422
Int. Cl. H05h *13/00*
U.S. Cl. 313—62 **7 Claims**



1. An isochronous cyclotron for heavy or light ions comprising:

a. a superconducting coil system for producing a strong magnetic field in the air core centrally of the coils,

b. an even number of pairs, at least four in number, of generally flat sectoral conducting plates, alternate pairs of which are at low or ground potential and the other pairs are connected to an RF voltage supply, mounted on tunable quarter wavelength resonator structures and defining an annular orbital region between the plates in the pairs and ion accelerating gaps between the edges of the pairs of plates and positioned in and generally orthogonal to the magnetic field in the central air core region,

c. means for energizing said plates with an RF voltage such that orbiting ions will be accelerated between the gaps,

d. means for injecting the ions to be accelerated into an inner position in the orbital region,

e. means for extracting the accelerated ions at an orbit location adjacent the periphery of the orbital region, and

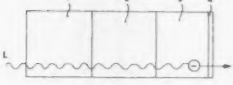
f. means for varying the magnetic field in the radial direction to provide radial focussing of the orbiting ion beam.

3,868,523
SEMITRANSPARENT PHOTOCATHODE

Anton Martin Klopfer; Siegfried Garbe; Gunter Frank, and Manfred Peterek, all of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,704
Claims priority, application Germany, Dec. 16, 1972, 2261757
Int. Cl. H01j *39/16*
U.S. Cl. 313—94 **15 Claims**

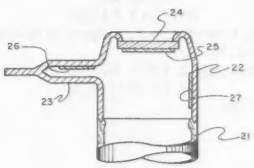
1. A semitransparent photocathode of III-V semiconductor compounds having a substrate, an intermediate layer and an active layer, the energy gap of the active layer being smaller than that of the intermediate layer and the active and the intermediate layer being p-doped, the intermediate layer having a composition having elements which differ from those of the substrate and the active layer and a lattice constant differing from the lattice constant of the active layer by less than 0.3% and from the lattice constant of the substrate up to several per cent.



3,868,524
STABILIZATION OF SEMICONDUCTOR PHOTOCATHODES

Herbert A. Stahl, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,047
Int. Cl. H01j *39/00*
U.S. Cl. 313—94 **8 Claims**



1. In a stabilized image intensifier tube having an evacuated envelope and a photoelectric cathode consisting chiefly of a compound of elements from the III-rd and V-th columns of the Periodic System, the improvement comprising:

at least one stain of a column V element coated on the inside of said envelope.

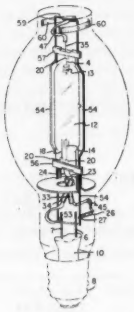
3,868,525
METAL HALIDE DISCHARGE LAMP HAVING A PARTICULAR RATIO OF HALOGEN ATOMS TO MERCURY ATOMS

John F. Waymouth, Marblehead, and Frederic Koury, Lexington, both of Mass., assignors to Sylvania Electric Products Inc., Danvers, Mass.

Continuation of Ser. No. 209,974, July 12, 1962, abandoned. This application Mar. 26, 1969, Ser. No. 810,490
Int. Cl. H01j *61/18*
U.S. Cl. 313—184 **12 Claims**

1. In a high pressure electric discharge device having an arc tube with electrodes sealed at each end thereof and having means to convey electrical energy to each of said electrodes and having atoms of mercury, atoms of a halogen selected from the group consisting of iodine, bromine and chlorine and atoms of a metal capable of reacting with halogen, the improvement which comprises: said halogen and mercury being contained in said arc tube in a ratio of halogen atoms to mer-

cury atoms between about 0.08 to 0.75, the visible emission of said arc tube when an arc is formed therein being a substantially complete forest of spectral lines in the emission spectrum, appearing at spacings less than about 5A apart.



3,868,526

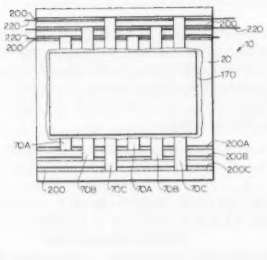
DISPLAY PANEL

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,762

Int. Cl. H01j *61/36*

U.S. Cl. 313—188 **24 Claims**



1. A display panel comprising

a plurality of insulating plates, a first array of first electrodes and a second array of second electrodes, said second electrodes being positioned at an angle to said first electrodes,

means connecting a plurality of said second electrodes in a plurality of groups so that a single source of potential can be connected to all electrodes in a group at the same time,

said means comprising an assembly of a plurality of strips of insulating material, each strip carrying a strip of metal and having all of the electrodes of a group secured to said strip of metal by means of a conductive cement.

3,868,527

GAS DISCHARGE PICTURE DISPLAY PANEL

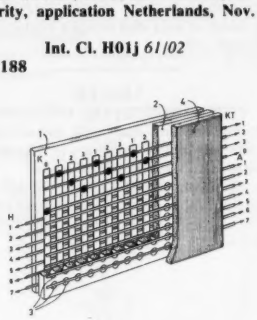
Gerhard Heinrich Friedrich De Vries; Johannes Petrus Hornman; Hendrik Kuster, and Johannes Van Esdonk, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,829

Claims priority, application Netherlands, Nov. 28, 1972, 7216085

Int. Cl. H01j *61/02*

U.S. Cl. 313—188 **6 Claims**



1. A gas discharge picture display panel comprising a pair of spaced plates defining a hermetically sealed enclosure therebetween filled with an ionizable gas, a first set of electrodes lying in a first plane within said enclosure and extending in a first direction therein, said first set of electrodes being divided into groups, a second set of electrodes within said enclosure lying in a second plane spaced from said first plane and extending in a direction forming an angle with said first direction, and a common conductor lying in a plane spaced from said first plane connecting the electrodes in each of said groups and extending hermetically through said enclosure to a source of potential.

3,868,528

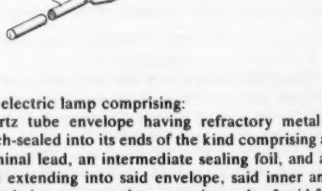
QUARTZ PINCHES CONTAINING SEALANT GLASS

William H. Lake, Novelty, and Gene I. Thomasson, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,045

Int. Cl. H01j *61/36*

U.S. Cl. 313—220 **10 Claims**



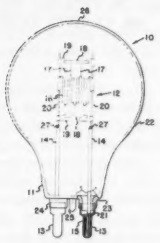
1. An electric lamp comprising:

a quartz tube envelope having refractory metal inleads pinch-sealed into its ends of the kind comprising an outer terminal lead, an intermediate sealing foil, and an inner lead extending into said envelope, said inner and outer leads being connected to opposite ends of said foil,

and a sealing glass bonded to said inner lead and filling the crevice in the quartz around said inner lead extending from said foil into said envelope, said sealing glass being substantially alkali-free and having a coefficient of expansion intermediate that of quartz and that of said inner lead.

8. The method of pinch-sealing a quartz arc tube which includes:
making a refractory metal inlead-foil-shank assembly comprising an outer terminal lead, an intermediate sealing foil and an inner shank,
applying to said inner shank a sheath of substantially alkali-free sealing glass having a coefficient of expansion intermediate that of quartz and that of said inner lead,
standing said assembly upright with the glass-sheathed shank uppermost and surrounding it by the lower end of a quartz tube,
heating the lower end of said quartz tube to plasticity while filled with inactive gas,
and quickly compressing the tube end to collapse it and hermetically unite the quartz to said intermediate sealing foil while causing said sealing glass to flow and fill a crevice in the quartz around the inner shank.

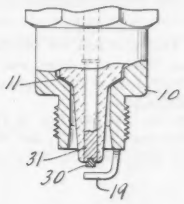
3,868,529
HALOGEN LAMP CONTAINING NICKEL-PLATED PARTS
LaVerne E. Walsh, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed May 24, 1973, Ser. No. 363,340
Int. Cl. H01k *1/20*
U.S. Cl. 313—222 **3 Claims**



1. An incandescent lamp of the tungsten-halogen type comprising an envelope of high temperature glass, a fill gas containing a small quantity of a halogen gas, said halogen gas selected from the group consisting of iodine and bromine, nickel-plated copper posts hermetically sealed to said envelope, said nickel-plated copper posts located at a distance from the filament such that the external temperature of the posts does not exceed approximately 302°C, side channels, means for electrically connecting said nickel-plated copper posts and said side channels, a tungsten filament, and means for electrically connecting the filament and the side channels.

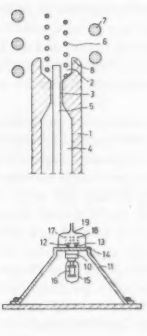
3,868,530
SPARK PLUG
Carl J. Eaton, Toledo, and Richard S. Podiak, Maumee, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio
Filed July 5, 1973, Ser. No. 376,524
Int. Cl. H01t *13/20*
U.S. Cl. 313—141 **4 Claims**

1. In a spark plug having a grounded shell, an insulator, at least one ground electrode carried by the shell, and a center electrode extending through said insulator and terminating in sparking relationship with said ground electrode, said center electrode being formed of metal having good spark corrosion resistant properties, the improvement comprising an axial recess in the firing end of the center electrode, said recess being larger in cross section at its inner end than at its outer end, and an insert of precious metal extending into and filling the recess, said insert being firmly supported by the adjacent



electrode with its end exposed at the firing end of the electrode.

3,868,531
ELECTRIC INCANDESCENT LAMP AND METHOD OF MANUFACTURING SAME
Dirk Jules Remi De Fraeye, and Jan Alfons Catharina Mewissen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 20, 1973, Ser. No. 390,166
Claims priority, application Netherlands, Sept. 13, 1972, 7212382
Int. Cl. H01j *5/48, 5/50*
U.S. Cl. 313—318 **4 Claims**



1. An electric incandescent lamp having an envelope which comprises a lamp cap manufactured from an insulating material a pair of elongated contact pins each having an axial passageway therein, said pins being carried by said lamp cap, and a current conductor extending from the lamp envelope through each passageway, each of said conductors being soldered in said passageway in which said conductor is disposed, each of said passageways comprising first, second and third axial sections, said second axial section having a cross-sectional area smaller than said first and third sections, said third section being disposed distal to the lamp envelope and being the axial extremity of said pin, said third axial section being at least partly filled with solder each of said axial sections being dimensional in closely spaced engagement with the circumference of said conductor carried therein, said closely

spaced relationship permitting the flow of molten solder therebetween and substantially limiting radial play therebetween.

3,868,532

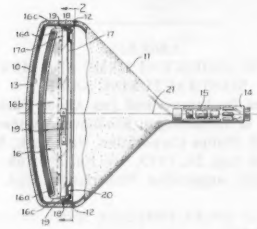
SHADOW MASK AND OVERSCAN SHIELD ASSEMBLY

Gerald K. Mac Lean, Hoffman Estates, and Thomas C. Minzenberger, Lake Bluff, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Continuation of Ser. No. 204,241, Dec. 2, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,893

Int. Cl. H01j *29/06, 29/08, 31/20*

U.S. Cl. 313—407 **1 Claim**



1. In a color television picture tube of the type having a glass envelope comprising a curved generally rectangular image screen panel section and a mating funnel and neck section sealed thereto, an interlaced pattern of different phosphors on the curved screen surface of said panel section, and electron gun means housed in said funnel and neck section for scanning the phosphors on said curved screen surface with electrons, an improved shadow mask and overscan shield assembly comprising:

a metal generally rectangular mask supporting frame having a peripherally continuous substantially constant cross-section and symmetrically disposed about the central axis of said envelope, said frame having a flange portion substantially parallel to said axis with a leading edge spaced from said screen surface and disposed in a single flat plane perpendicular to said axis and a ring portion, of a width substantially equal to that of said flange portion, extending inwardly from said flange portion toward said axis and substantially perpendicular thereto, and said frame being secured to said envelope with a space between said frame and the inner side walls of said envelope;

a metal shadow mask, of thinner metal stock than said frame, having a multi-apertured parallax barrier with a curvature generally conforming to that of said curved screen surface and with its apertures in spaced predetermined registration with said phosphor pattern and having an integral skirt extending from said parallax barrier parallel to said axis into surface contact with said flange portion of said frame and secured thereto;

and a metal foil electron shield member in surface contact with said ring portion of said frame and secured thereto, having a curved outwardly extending portion bridging the gap between said frame and said envelope side walls and a second portion extending inwardly from said frame toward said axis to constitute a curviform rectangular rear window with inwardly curved sides, for intercepting overscan electrons from said electron gun means and preventing their impingement upon the flange portion of the mask frame, the shadow mask skirt, or the inner side walls of the envelope.

3,868,533

CATHODE-RAY TUBE FOR IMAGE DISPLAY

Roelof Egbert Schuil, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,655

Claims priority, application Netherlands, Mar. 8, 1973, 7303250

Int. Cl. C09k *1/14;* **H01j** *29/20*

U.S. Cl. 313—468 **4 Claims**

1. Cathode-ray tube for black-and-white image display, provided with a luminescent screen which contains a luminescent terbiumactivated oxysulphide of at least one of the elements yttrium, gadolinium, lanthanum and lutetium, characterized in that the oxysulphide also contains samarium as an activator and satisfies the formula $(M_{1-x-y}\ Tb_x\ Sm_y)_2\ O_2S$, where M is at least one of the elements yttrium, gadolinium, lanthanum and lutetium, and 0.003 x 0.030 and 0.0001 y 0.005, said oxysulfide exhibiting a white color emission under cathode ray excitation.

3,868,534

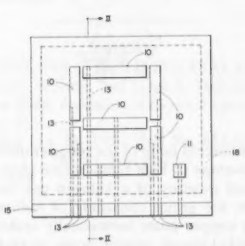
ELECTROCHEMILUMINESCENT DEVICE HAVING A MIXED SOLVENT

Albert Pighin, Ottawa; Robert Alvin Creswell, Carp, and Douglas Peter Malanka, Ottawa, Ontario, all of Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Nov. 29, 1972, Ser. No. 310,247

Int. Cl. H05b *33/02*

U.S. Cl. 313—483 **7 Claims**



1. An electrochemical luminescent device comprising:

a support plate; an electrode array on said support plate, said array comprising at least one electrode; electrical conductor means connected to said electrode array; a transparent cover plate spaced from said support plate and electrode array; a spacing member extending between said support plate and said cover plate to define a sealed space between said electrode array and said cover plate; a counter electrode in said sealed space; electrical conductor means connected to said counter electrode; and an electrochemical luminescent solution in said sealed space, said luminescent solution comprising a mixture of a fluorescent compound, a solvent for the fluorescent compound, and an electrolyte, the solvent being a mixture of an aprotic solvent and an aromatic solvent.

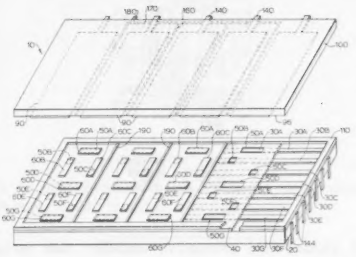
3,868,535
MULTI-POSITION CHARACTER DISPLAY PANEL

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 173,854, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 124,373, March 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 61,642, Aug. 6, 1970, abandoned. This application Feb. 28, 1974, Ser. No. 446,832

Int. Cl. H01j 61/66

U.S. Cl. 313—519 31 Claims



21. A display device comprising

a gas-filled envelope including

an insulating base plate having a top surface,

a plurality of conductive strips on said top surface of said base plate,

an insulating layer on said strips,

a plurality of spaced-apart groups of apertures in said insulating layer, each aperture in each group exposing one conductive strip, corresponding apertures in each group exposing the same conductive strip,

a conductive member in each of said apertures in direct contact with the associated conductive strip and operable as a glow cathode, there thus being a group of conductive members associated with each group of apertures,

a second apertured insulating layer seated on said first insulating layer and having a plurality of apertures, each enclosing one of said conductive members and shielding said conductive members from each other,

an anode electrode associated with each group of conductive members, and

an insulating cover plate having a viewing window through which glowing cathodes can be viewed,

said base plate and said cover plate being hermetically sealed together and forming said envelope.

3,868,536
IMAGE INTENSIFIER TUBE EMPLOYING A MICROCHANNEL ELECTRON MULTIPLIER

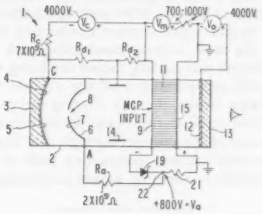
Richard S. Enck, Jr., Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Oct. 18, 1971, Ser. No. 189,864

Int. Cl. H01j 29/41

U.S. Cl. 315—12 6 Claims

1. In an image intensifier tube, a photocathode means disposed to receive a photon image for emitting into the tube an electron image corresponding to the received photon image, microchannel electron multiplier means having an input face disposed to receive the emitted electron image for multiplying the electron current of said image, an anode electrode means disposed intermediate said photocathode means and said microchannel multiplier means along the path of flow of the electron image for accelerating the electron image and for focusing same upon said electron receiving the face of said microchannel electron multiplier means, and power supply means for biasing said anode electrode means at a potential positive with respect to the operating potential of said input face of said microchannel electron multiplier means to inhibit the flow of positive ions from said microchannel multiplier means to said photocathode means, said biasing means for biasing said anode means relative to said microchannel electron multiplier means include, a series connection of a voltage



regulating means and a resistor to form a source of regulated anode bias potential connected in parallel with the potential applied across said microchannel electron multiplier means, and means for applying the regulated anode bias potential derived across said voltage regulator means to said anode means.

3,868,537
AMPLIFIER WHICH CONSUMES A SUBSTANTIALLY CONSTANT CURRENT

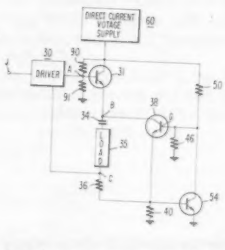
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed July 27, 1973, Ser. No. 383,207

Claims priority, application Great Britain, Feb. 5, 1973, 5613/73

Int. Cl. H01j 29/70

U.S. Cl. 315—389 15 Claims



1. An amplifier which consumes a substantially constant direct current, comprising:

a source of direct current voltage;

a source of signal voltage waveforms;

a load impedance;

first active current conducting means, the main current conducting path of which is serially coupled between said source of direct current voltage and said load impedance and a control electrode of which is coupled to said source of signal voltage waveforms;

second active current conducting means, the main current conducting path of which is coupled at one terminal to the junction of the main current conducting path of said first active current conducting means and said load impedance to form a first junction of said load impedance and said main current conducting path of said second active current conducting means and at the other terminal to the terminal of said load impedance remote from said first junction to form a second junction of said load impedance and said main current conducting path of said second active current conducting means;

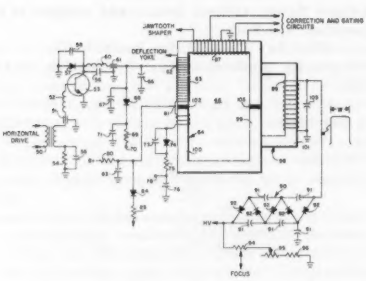
sensing means coupled between said second junction and a point of reference potential for sensing current flow between said second junction and reference potential; and third active current conducting means the main current conducting path of which is serially coupled between said source of direct current voltage and a point of reference potential and a control electrode of which is coupled to said sensing means and responsive to signals representative of current flow therethrough and a control electrode of said second active current conducting means is coupled to the main current conducting path of said third active current conducting means for being controlled by said signals representative of the current flow through said sensing means, thereby altering the conductivity of said second active current conducting means for rendering the sum of the current through said load impedance and the main current conducting path of said second active current conducting means substantially constant.

3,868,538

FERRO-RESONANT HIGH VOLTAGE SYSTEM

David L. Blanchard, Des Plaines, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 11, 1973, Ser. No. 359,582
Int. Cl. H01j *29/70*
U.S. Cl. 315—411 **13 Claims**



1. In a cathode ray tube high-voltage supply system in which sawtooth-shaped current pulses are developed in a first transformer winding in order to produce a scanning waveform in a deflection yoke on said cathode ray tube, in which energy developed as a result of magnetic field collapse in said deflection yoke is utilized to produce high-voltage output pulses in a second winding and in which the load coupled to said second winding requires a broad generally-square pulse shape, the improvement comprising:

a first closed magnetic circuit non-saturating in response to development of said sawtooth-shaped pulses or in the presence of said energy and including a first ferromagnetic core upon which said first winding is wound;

a second closed magnetic circuit saturating in response to said energy and including only a portion of said first core together with a second ferromagnetic core upon which said second winding is wound;

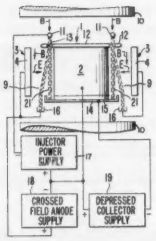
and a capacitor, included in said load, coupled across said second winding and having a value enabling current cycles in said second winding to coincide with current cycles in said first winding sufficiently that said collapse initiates saturation reversal in said second core.

3,868,539

CROSS-FIELD AMPLIFIER HAVING A BEAM OF ELECTRONS FLOWING THROUGH THE INTERACTION REGION ORTHOGONALLY TO MICROWAVE POWER FLOW

George K. Farney, New Providence, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed June 28, 1966, Ser. No. 561,220
Int. Cl. H01j *25/34*
U.S. Cl. 315—39.3 **8 Claims**



1. A crossed-field microwave amplifier tube including, means forming a cathode electrode, means forming an anode electrode structure operated in use at a potential positive with respect to said cathode and including a portion spaced from said cathode electrode to define an electronic interaction region therebetween, means for applying a magnetic field to the interaction region with the applied magnetic field being directed transversely to the electric field between said anode and cathode electrodes to form a crossed-field interaction region, said anode electrode structure including a periodic slow wave circuit portion disposed adjacent said crossed-field interaction region and having an input and output terminal said circuit being directed orthogonally to both the electric field and the magnetic field in the crossed-field interaction region such that signal wave power flow on said slow wave circuit is orthogonal to the crossed electric and magnetic fields, means for injecting a stream of electrons along the direction of the applied magnetic field with a substantial component of velocity orthogonal to the diection of signal power flow on said slow wave circuit, whereby electron noise on the electron stream is not strongly coupled to said slow wave circuit, and said anode structure means including a collector electrode portion disposed at at least one in the direction of said magnetic field end of a portion of said interaction region for causing the electron stream to flow through the interaction region to said collector electrode, thereby extending the dynamic range of the crossed-field ammplifier well into the low signal regime.

3,868,540

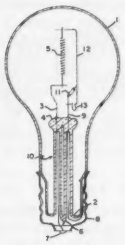
INCANDESCENT LAMP HAVING EXTENDED LAMP LIFE

Edmund M. Passmore, Wilmington, and Eugene A. Castello, North Reading, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 29, 1973, Ser. No. 410,760
Int. Cl. H01k *1/64*
U.S. Cl. 315—73 **1 Claim**

1. An incandescent lamp comprising: a gas filled glass bulb sealed at its lower end to the flare of a stem press glass mount; a screw base, having a center contact, attached to the lower end of said bulb; two lead-in wires extended through the stem press of said mount, one of said lead-in wires being electrically connected to said center contact and the other being electrically connected to the rim of said screw base; a coiled tungsten wire filament disposed within said bulb and electrically conected between said two lead-in wires; an inrush current limiting resistor in series with said filament and a thermal switch in parallel with said resistor, said switch operative to

electrically short out said resistor upon attainment thereof of a predetermined elevated temperature; and means to heat said



switch to said predetermined elevated temperature, said means being coiled tungsten wire filament.

3,868,541
FILAMENT-CURRENT CONTROL UNIT IN ELECTRON-BEAM APPARATUS

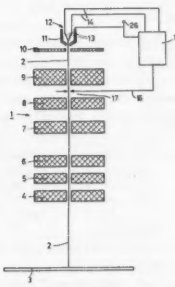
Peter Van Zuijlen, and Leendert Antonius Fontijn, both of Delft, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,549

Claims priority, application Netherlands, June 5, 1971, 7107749

Int. Cl. H01j *3/08*

U.S. Cl. 315—94 **5 Claims**



1. An electron-beam apparatus comprising a cathode for the thermal emission of an electron beam, A Wehnelt electrode in proximity to said cathode for controlling said electron beam, a filament current control unit including a variable resistance coupled between said Wehnelt electrode and said cathode for maintaining a desired emission of said electron beam, and an interception electrode for intercepting a portion of the electron beam said filament-current control unit being operable for adjusting the temperature of said cathode to a value at which minimum signals resulting from variation of said variable resistance are generated at said interception electrode.

3,868,542
FLUORESCENT DISPLAY DEVICES

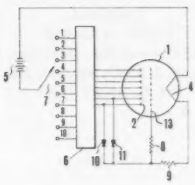
Mikiharu Tanji, Watarai-gun, Japan, assignor to Ise Electronics Corporation, Ise City, Mie Prefecture, Japan

Filed July 11, 1973, Ser. No. 378,198

Claims priority, application Japan, July 14, 1972, 47-83315[U]

Int. Cl. H05b *41/00*

U.S. Cl. 315—169 TV **4 Claims**



1. In a fluorescent display device of the type including a fluorescent display tube containing a plurality of fluorescent segment electrodes which are arranged in a predetermined pattern, a heater electrode and a control electrode disposed between said segment electrodes and said heater electrode, the improvement which comprises a source with its negative pole connected to one terminal of said heater electrode, a decoder with its output terminals connected with said segment electrodes, a pattern selection switch connected between the positive pole of said source and the input terminals of said decoder, and a diode connected between one of the output terminals of said decoder and the other terminal of said heater electrode and said control electrodes for energizing said heater electrode from said source when said one of the output terminals in energized.

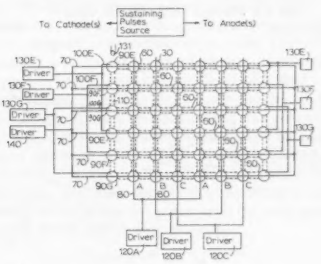
3,868,543
DISPLAY PANEL

George Ernest Holz, North Plainfield, and James Alexander Ogle, Neshanic Station, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 186,415, Oct. 4, 1971, Pat. No. 3,789,265, which is a continuation of Ser. No. 881,660, Dec. 3, 1969, abandoned. This application July 27, 1973, Ser. No. 383,166

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **4 Claims**



1. A display panel comprising

a plurality of discrete gas-filled cells formed in an insulating matrix,

an anode and a cathode electrode coupled to each of said cells for causing the individual cells to glow, and

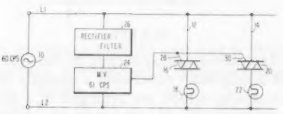
an auxiliary electrode in each of said cells and in contact with the gas therein,

each auxiliary electrode comprising a conductive member having an insulating coating on the surface of which an

electrical charge can form when excited particles are present in the gas,

each said auxiliary electrode having its conductive member extending outside said panel whereby electrical connection can be made thereto and electrical potential can be applied thereto whereby each auxiliary electrode, carrying said electrical charge and said electrical potential, is operable in conjunction with potentials on the associated anode and cathode to operate each cell.

3,868,544
LAMP FLASHER
Donald S. Banks, 234 Lowell Rd., Wellesley, Mass. 02181
Filed Aug. 2, 1973, Ser. No. 385,924
Int. Cl. H05b *37/00*
U.S. Cl. 315—200 A **5 Claims**



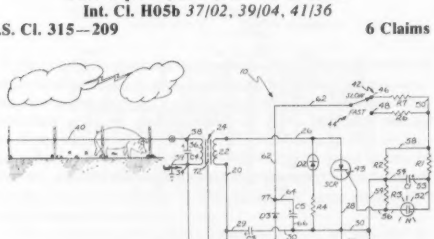
1. A power modulator for periodically modulating the power applied to a load from an A.C. power source comprising:

a. controllable A.C. switch means adapted to be coupled between the source and the load, and

b. control signal generator means coupled to said A.C. switch means for continuously generating control signals for controlling the time in each half-cycle of A.C. power at which the switch means is rendered conductive;

c. the frequency at which the control signals are generated being very close to, but different from, the frequency of the A.C. power source or a harmonic thereof, so that the phase difference between successive control signals and corresponding A.C. power cycles continuously and cyclically varies, whereby the A.C. power applied to the load also continuously and cyclically varies.

3,868,545
VARIABLE FREQUENCY ELECTRIC FENCE CHARGING CIRCUIT
Thomas E. Caron, Crystal, Minn., assignor to Sta-Tite Corporation, Plymouth, Minn.
Filed Sept. 10, 1973, Ser. No. 396,076
Int. Cl. H05b *37/02, 39/04, 41/36*
U.S. Cl. 315—209 **6 Claims**



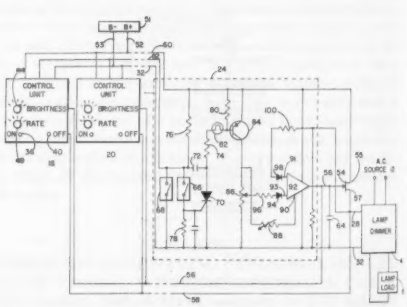
1. A variable frequency electric fence charging circuit for use with an alternating current source and a conductive fence wire for charging the fence wire to restrict movement of various types of livestock, comprising:

a firing circuit including input terminals, a silicon controlled rectifier with a gate, and a step-up transformer with primary and secondary windings, said silicon controlled rectifier electrically connected in series with said primary winding and connectable across the alternating current source, said secondary winding defining the output of said firing circuit and being electrically connectable between the fence wire and ground;

a triggering circuit, including an oscillator, said oscillator having input and output terminals and being provided with means for selectively establishing a plurality of distinct predetermined output frequencies and said frequency establishing means being substantially unaffected by impedance variations in the fence wire caused by livestock contact with the wire, the output terminals of said oscillator electrically connected to said gate of said silicon controlled rectifier to selectively bias said gate to an open condition, permitting current flow from the alternating current source to said primary winding, thereby inducing stepped up voltage in said secondary winding and charging the fence wire; and

said triggering circuit further including a diode and capacitor, said diode energizable from the alternating current source, and connected in parallel with said capacitor and in series to the input terminal of said oscillator to energize said oscillator in synchronization with the alternating current source such that said oscillator develops and delivers periodic output pulses biasing said gate of said silicon controlled rectifier to an open condition as the alternating current source nears a peak voltage magnitude to thereby apply the voltage to said primary winding of said transformer.

3,868,546
LIGHT DIMMING SYSTEM FOR CONTROLLING BRIGHTNESS AND RATE OF CHANGE OF BRIGHTNESS OF LIGHTS
Benjamin F. Gilbreath, Richardson, and Hou Leh Yeh, Euless, both of Tex., assignors to Hunt Electronics Company, Dallas, Tex.
Filed Mar. 26, 1973, Ser. No. 344,491
Int. Cl. H05b *37/02, 39/04*
U.S. Cl. 315—293 **13 Claims**



1. A light dimming system including

a dimmer unit responsive to a voltage signal for controlling the flow of current through a lamp load,

a capacitor coupled to said dimmer circuit for storing a charge to thereby develop thereacross said voltage signal, and

at least one control unit coupled to said capacitor for selectively charging and discharging said capacitor, said control unit comprising

an operational transconductance amplifier for supplying current to and receiving current from said capacitor to thereby respectively charge and discharge the capacitor, said amplifier having first and second differential input terminals and a control terminal,

first adjustable means for controlling voltage applied to said second differential input terminal, and

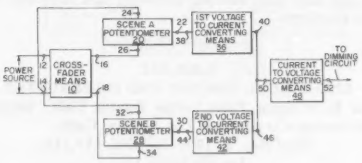
second adjustable means for controlling current applied to said control terminal to thereby control the current supplied to or received from said capacitor by said amplifier.

3,868,547

DIPLESS CROSS FADER WITH PILE-ON

George A. Kappenhagen, Itasca, and James B. Tabor, Wheaton, both of Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 19, 1973, Ser. No. 352,822
Int. Cl. G05f 1/10; H05b 37/00
U.S. Cl. 315—296 10 Claims



1. Apparatus for providing a dipless signal adapted to be connected to a stage-lighting dimmer when cross-fading between sequential lighting levels, said apparatus comprising:

a. a current to voltage converting means having an output adapted to be connected to a dimming circuit;

b. a first and a second voltage to current converting means with current outputs connected together to feed the sum of the currents into said current to voltage converting means;

c. scene A and scene B potentiometers each having two end terminals and a wiper, said wiper of said scene A potentiometer being connected to feed a voltage to said first voltage to current converting means and said wiper of said scene B potentiometer being connected to feed a voltage to said second voltage to current converting means; and

d. a cross-fader means operable to reduce the voltage across the end terminals of one scene potentiometer and simultaneously increase the voltage across the end terminals of the other scene potentiometer, whereby in normal cross-fading operation, a signal which is proportional to the sum of the voltages on the two scene potentiometers is produced, thereby avoiding dipping of the signal to the dimmer during cross-fading.

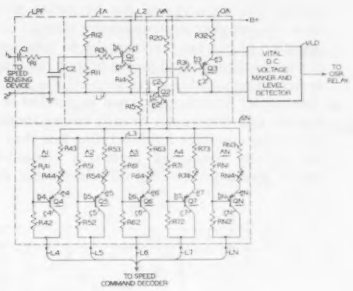
3,868,548

FAIL-SAFE TRANSISTORIZED OVERSPEED CIRCUIT ARRANGEMENT

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jan. 23, 1974, Ser. No. 435,689
Int. Cl. G05d 13/62
U.S. Cl. 317—5 11 Claims

11. A fail-safe vehicle overspeed sensing circuit comprising, means for generating a.c. signals proportional to the actual speed of the vehicle, filter means for receiving and filtering the a.c. signals, decoding means for decoding speed commands received onboard the vehicle, selection means having a one of a plurality of control stages activated by said decoding means, input amplifying means for amplifying and supplying the filtered a.c. signals to said selection means, a variable gain amplifying means coupled by the activated one of the plurality control stage to establish a predetermined gain, and an output amplifying means coupled to said variable gain amplifying means and producing an amplified output which is coupled to a d.c. voltage maker and level detector to provide an output



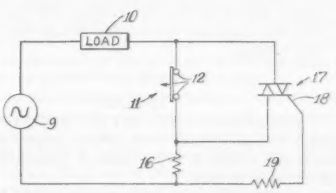
signal only when the actual speed of the vehicle is below the last received authorized speed command.

3,868,549

CIRCUIT FOR PROTECTING CONTACTS AGAINST DAMAGE FROM ARCING

Edward J. Schaefer, and August L. Streater, both of Bluffton, Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Apr. 26, 1973, Ser. No. 354,694
Int. Cl. H02h 7/22
U.S. Cl. 317—11 E 32 Claims



1. In a circuit including an alternating current supply, a load, and switch contacts connected to carry load current when closed and required to open under heavy current load conditions, the improvement comprising contactless switch means adapted to be connected to form a current path which bypasses said contacts, an electrical device adapted to be connected in series with said load and said contacts, said switch means including bias means connected to respond to current flow through said device and to a potential across said contacts, said switch means being biased to conduction only when a potential exists across said contacts and current flows through said device, whereby said switch means is biased to conduction and load current is transferred to said path from the time of initiation of an arc until the next subsequent zero crossing of the alternating current.

3,868,550

CIRCUIT BREAKER

Wolfgang Knauer, and Michael A. Lutz, both of Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

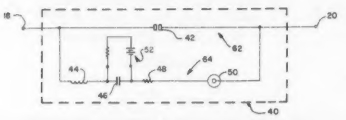
Continuation-in-part of Ser. No. 333,434, Feb. 16, 1973, abandoned. This application Dec. 26, 1973, Ser. No. 428,636
Int. Cl. H02h 7/22
U.S. Cl. 317—11 B 8 Claims

1. A circuit breaker for serial connection into an electric circuit for operation at line voltage between a power supply

and a load for the breaking of the electric circuit between the power supply and the load, comprising:

an in-line branch having a controllable electrically conductive device to create electrical continuity for carrying the normal line current and for becoming nonconductive upon operation to nonconductive control condition and cessation of current therethrough to terminate electrical continuity through said in-line branch, said in-line branch device being capable of holding off line voltage;

an interrupter branch connected in parallel to said in-one branch, said interrupter branch having therein a capacitor having a voltage holdoff rating less than line voltage and serially connected thereto a crossed-field switch device means for holding off line voltage thereto when



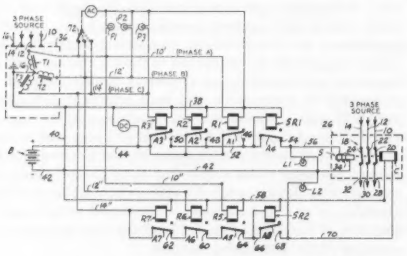
nonconductive, for onswitching with voltage applied and for offswitching current and for holding off line voltage, said crossed-field switch device means being serially connected with said capacitor so that said capacitor can be precharged when said crossed-field switch device means is nonconductive and said capacitor can be discharged upon making such crossed-field switch device means conductive to cause cessation of current in said in-line branch to cause said in-line branch device to become nonconductive and said crossed-field device means being also for offswitching against current in said interrupter branch to offswitch current into said capacitor so that said capacitor has a lower voltage thereacross than line voltage.

3,868,551

POLYPHASE CIRCUIT CONTROL SYSTEM

Wilburn W. Spary, Pond Creek, Okla., assignor to Thomas L. Bryan and Robert E. Bryan, both of Oklahoma City, Okla., part interest to each

Filed Mar. 25, 1974, Ser. No. 454,634
Int. Cl. H01h *47/18*
U.S. Cl. 317—23 **5 Claims**



1. In a polyphase current distribution control system including a plurality of phase line source and distribution conductors, a neutral line conductor, a polyphase circuit breaker having respective normally closed switch elements interposed between respective phase line source conductors and distribution line conductors, the improvement comprising:

a solenoid operable to simultaneously open said respective switch elements;

a reset coil operable to simultaneously close said respective switch elements;

a normally open control circuit connecting a source of direct current with said solenoid;

a plurality of relays respectively associated with respective phase line conductors;

relay circuit means connected to energize said plurality of relays from the voltage between said respective phase line conductors and said neutral line conductor;

a first slave relay having normally closed contacts connected in series in said solenoid control circuit; and,

a second slave relay having normally open contacts connecting said reset coil with at least one phase of said phase line source of electrical energy,

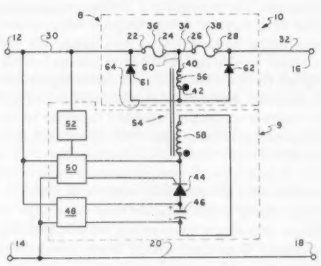
whereby a phase failure in said phase line source de-energizes at least one relay of said plurality of relays and closes said normally open control circuit for energizing said solenoid and opening said normally closed switch elements and whereby correction of said phase failure energizes said second slave relay and said reset coil for reclosing said normally closed switch elements.

3,868,552

ELECTRICAL CIRCUIT AND INTERRUPTER

Arthur K. Wickson, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 5, 1973, Ser. No. 413,116
Int. Cl. H02h *5/04*
U.S. Cl. 317—40 A **14 Claims**



1. An electrical circuit interrupter for a current-carrying circuit between a power source and a load circuit comprising:

a. fuse means connected in series with said current-carrying circuit;

b. current-amplifying means having input and output connections, one of said output connections being operatively coupled to one end of said fuse means;

c. means operatively connected between the other of said output connections and said other end of said fuse means to prevent the flow of current from the power source to the load circuit after the fuse has ruptured;

d. means for sensing electrical disturbances in said current-carrying circuit to provide signal information; and,

e. means operatively coupled to said input connections for providing electrical current to said current amplifying means in response to said signal information whereby said fuse means is ruptured to interrupt the flow of current in said current-carrying circuit.

3,868,553

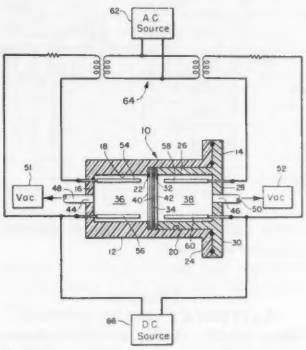
POLING OF FERRO-ELECTRIC SUBSTRATES

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 196,351, Nov. 8, 1971, Pat. No. 3,761,746.
This application June 27, 1973, Ser. No. 374,213
Int. Cl. H04r *17/00, 31/00*
U.S. Cl. 317—262 F **2 Claims**

1. Apparatus for poling a ferro-electric body comprising:

a hollow casing assembly;
support means in said casing assembly for mounting a ferroelectric body in the interior of said casing to divide said interior into two mechanically isolated subchambers;
sealing means for electrically isolating said subchambers from each other;



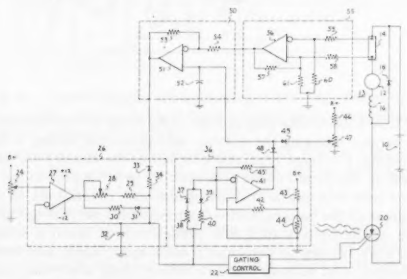
ionizing means for establishing an ionization region in each of said subchambers;
and means for establishing a unidirectional electric potential difference between the ionization regions in the respective subchambers.

3,868,554

CURRENT LIMIT SYSTEM FOR DC MOTOR CONTROL

Charles Edward Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Dec. 26, 1973, Ser. No. 428,022
Int. Cl. H02p *5/00*
U.S. Cl. 318—434 **10 Claims**



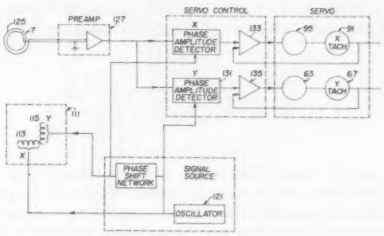
1. A current limiting system for a pulse controller including solid-state switching means for metering power from a DC source to a DC load comprising:
means for sensing load current and outputting a signal representative thereof;
a gating control for controlling the mark-space ratio of the solid-state switching means as a function of an applied control signal;
a power control circuit for applying a control signal representative of a desired mark-space ratio to said gating control;
a current limit signal stage for producing a current limiting signal which varies as a function of mark-space ratio;
means coupling said power control circuit to said current limit signal stage; and
a current limit detector for receiving signals from said load current sensing means and said current limit signal stage, and for outputting a signal to said power control circuit to regulate the operation thereof.

3,868,555

LINE TRACING APPARATUS

John E. Knowles, Stittsville, Ontario, Canada, assignor to Instronics Ltd., Stittsville, Ontario, Canada

Filed Jan. 24, 1972, Ser. No. 220,088
Int. Cl. G05b *19/36*
U.S. Cl. 318—577 **12 Claims**



1. Means adapted to provide the X and Y coordinates of selected points along a manually traced line, relative to a preselected origin and axis of reference, comprising:
a. a planar table providing a transparent support for a map or drawing, or for a sheet on which a projected image is received, lines on a surface of which map, drawing or sheet are to be traced;
a movable member positioned on the side of the transparent support remote from the said map, or drawing, or sheet;
c. light projecting means carried by the movable member and arranged to project a graticle through the support onto the said surface, the position of which graticle relative to the said movable member is fixed;
d. operator controlled means, including a free cursor index manually movable by said operator to trace said lines, by which the said movable member can be moved to cause the said graticle to follow a desired line on the said sheet;
e. X axis encoding means arranged to provide an indication of any change in position of the movable member along a predetermined X axis on the said sheet;
f. Y axis encoding means arranged to provide an indication of any change in position of the movable member along a predetermined Y axis on the said sheet; and
g. operator actuated read-out means providing when actuated an output indicative of X and Y coordinates ascertained by the two encoding means.

3,868,556

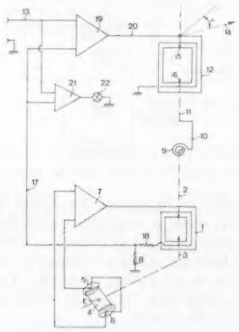
METHOD AND APPARATUS FOR CONVERTING A FORCE OR MECHANICAL MOVEMENT INTO AN ELECTRICAL QUANTITY AND SERVO-SYSTEM EMBODYING SAME

Ernest Jacques Andre Lesure, Paris, France, assignor to Exaprecis S.A., Paris, France

Filed Dec. 14, 1972, Ser. No. 315,022
Claims priority, application France, Dec. 15, 1971, 71.45138
U.S. Cl. 318—676 **3 Claims**

1. A servo-device comprising a first electro-magnetic assembly including a first movable frame carrying a first winding, said frame being pivotally mounted to turn about an axis, a second electro-magnetic assembly including a second movable frame carrying a second winding, said second frame being pivotally mounted to turn about an axis, a spring mechanically interconnected between said first and second movable frames, whereby the angular displacement of said second movable frame acts through said spring to tend to displace said first movable frame about its axis together with said first winding,

said first frame and winding being mechanically associated with an assemblage comprising a source of energy, a differential sensitive means responsive to that energy for producing an electrical current as a function of the energy received by said differential sensitive means, and a distributor of the energy for varying the energy received by the differential sensitive means as a function of the relative positions of the energy source, the distributor and the differential sensitive means, said first movable frame being mechanically connected to said assemblage for varying the energy received by said differential sensitive means as a function of the displacement of said first movable frame and winding, a frist differential amplifier, said differential sensitive means being electrically connected through said first differential amplifier to said first winding for feeding an



electrical signal to said first winding as a function of the energy received by said differential sensitive means for creating a turning force on the first winding which tends to oppose and to balance the displacement force being exerted through said spring onto said first movable frame, a second differential amplifier adapted to receive an electrical input signal from an external source, said second differential amplifier having its output electrically connected to said second winding for producing angular displacement of said second frame as a function of the electrical input signal from said external source, and said first winding being electrically connected to the input of said second differential amplifier for feeding an electrical signal back from said first winding to said second differential amplifier for servo-controlling the angular displacement of said second movable frame.

3,868,557

MOTION DAMPING APPARATUS

Philip Romeo Scott, Jr., Berlin, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,384

Claims priority, application Great Britain, Mar. 29, 1972, 14682/72

Int. Cl. G05b *19/40*

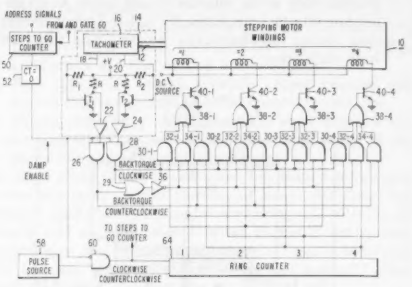
U.S. Cl. 318—685 **7 Claims**

1. A control system for a stepping motor having a movable member and a plurality of phase windings comprising, in combination:

means for providing signals sequentially to said windings for creating torque to move said movable member;

means coupled to said movable member for producing a first signal when said movable member is in motion and a second different signal when it is stopped; and

means responsive to an indication that said movable member is approaching its final step and to said first signal indicating said movable member is in motion for removing a signal from the phase winding which produces maximum torque to move said movable member to its final step and for applying a signal to a different phase winding to produce a reverse torque on said movable member



only when said first signal is present whereby said movable member is stopped.

3,868,558

BATTERY CHARGING SYSTEMS

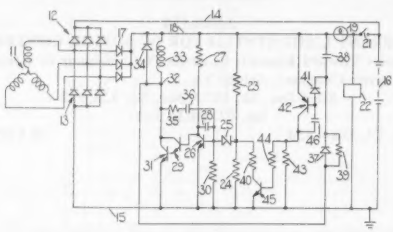
Albert William Winkley, Hadley, and David Gordon Williams, Birmingham, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England

Filed Oct. 11, 1973, Ser. No. 405,433

Claims priority, application Great Britain, Nov. 10, 1972, 46775/72

Int. Cl. H02j *7/14*

U.S. Cl. 320—12 **3 Claims**



1. A battery charging system comprising in combination a generator charging the battery, said generator having a field winding, a voltage regulator coupled to the battery and controlling the output of the generator by switching the circuit to said field winding at a mark-space ratio determined by the voltage of the battery, said voltage regulator permitting charging of the battery to a first predetermined level, a sensing network serving to detect said mark-space ratio, and means whereby said sensing network serves when said mark-space ratio is infinite to increase the voltage to which the battery is charged for a predetermined period of time.

3,868,559

BATTERY CHARGING SYSTEMS

William Frank Hill, Stafford, and Albert William Winkley, Hadley, both of England, assignors to The Lucas Electrical Company, Limited, Birmingham, England

Filed Oct. 25, 1973, Ser. No. 409,448

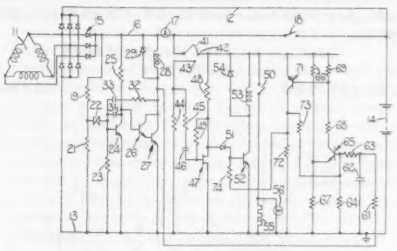
Claims priority, application Great Britain, Nov. 21, 1972, 53840/72; Dec. 19, 1972, 58676/72

Int. Cl. B62d *63/04;* **H02j** *7/14*

U.S. Cl. 320—61 **9 Claims**

1. A battery charging system including a wound-field generator charging a battery, on a voltage regulator, said voltage regulator having a switching device in series with the field winding, together with means sensitive to the voltage of the

battery determining the mark-space ratio of said switching device, at least one non-essential load connected across the battery, and means sensitive to the mark-space ratio of said



switching device for dis-connecting said non-essential load when the output voltage of the generator falls below a predetermined value.

3,868,560

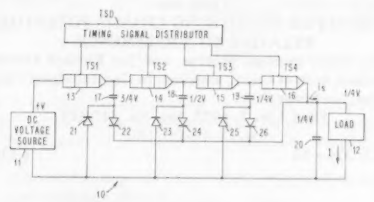
CAPACITIVE VOLTAGE REDUCER

Harry S. Hoffman, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,386

Int. Cl. H02m *3/14*

U.S. Cl. 321—2 **16 Claims**



8. In a power supply for supplying a low DC voltage to a load which power is derived from a power source providing a high DC voltage, comprising:

a plurality of stages connected to said source and load including at least one preceding stage and one succeeding stage; said preceding stage comprising:

First capacitor means;

and first circuit means including selectively actuated first switch means for connecting said first capacitor means in series with said load, said first circuit means being operative when said first switch means is actuated to supply current to said load at said low DC voltage and to charge said first capacitor means from a state of lesser charge to a state of greater charge;

said succeeding stage comprising:

second capacitor means,

second circuit means including selectively actuated second switch means for connecting said second capacitor means in series with said first capacitor means and said load, said second circuit means being operative, when said second switch means is actuated and said first switch means is deactuated, to supply current to said load at said low DC voltage and to charge said second capacitor means with power derived from said first capacitor means, and third circuit means including selectively actuated third switch means for connecting said second capacitor means in series with said load to supply power thereto when said third switch means is actuated.

3,868,561

RESONANT CIRCUIT TRANSFORMER

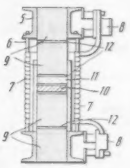
Hans Matthes, Remscheid, Germany, assignor to AEG-Elotherm G.M.B.H. Remscheid, West Germany

Filed Mar. 12, 1974, Ser. No. 450,377

Claims priority, application Germany, Mar. 30, 1973, 2315970

Int. Cl. H02m *1/14*

U.S. Cl. 321—10 **2 Claims**



1. In a parallel resonant circuit transformer of the type having a controllable rectifier element fed by an AC current supply, an inverter output circuit incorporating an inductor and a smoothing choke connecting said rectifier to said inverter circuit and including a magnetic core element having a plurality of legs, the improvement comprising a laminated magnetic core section in each leg and at least one section of ferromagnetic core material in each leg having a saturation induction lower than the saturation induction of said laminated core section.

3,868,562

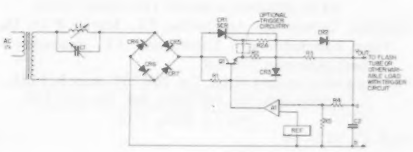
ENERGY STORAGE METHOD AND APPARATUS

Duane Marshall, Lexington, Mass., assignor to United States Scientific Instruments, Inc., Watertown, Mass.

Filed Aug. 2, 1973, Ser. No. 384,964

Int. Cl. G05f *1/58*

U.S. Cl. 321—13 **13 Claims**



1. A method of reducing power dissipation under wide load variations in energy storage through a series pass linear path from an a.c. voltage source, that comprises, initially passing pulsating rectified a.c. current from said source through the linear path to start the energy storage; automatically responding to the initial relatively high current from said source through said linear path to by-pass said series pass linear path by a non-linear high-current path each half-cycle of the a.c. voltage repetitively until substantially full energy storage is attained; and thereupon and thereafter confining the current from said source to said series pass linear path while regulating the same to maintain the desired energy storage.

3,868,563

VOLTAGE REGULATOR FOR GENERATOR

Tsuyoshi Hirata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1968, Ser. No. 787,680

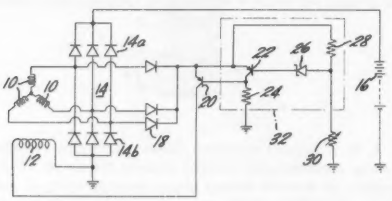
Claims priority, application Japan, Jan. 11, 1968, 43-1664

Int. Cl. H02p *9/30*

U.S. Cl. 322—28 **4 Claims**

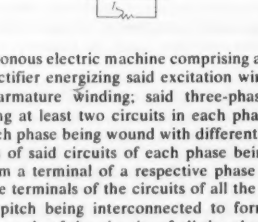
1. A voltage regulator circuit for a generator having an exciting circuit comprising:

a. a first transistor and a second transistor, said first transistor and said second transistor each having a pair of conduction electrodes and a control electrode;
b. a first resistor;
c. means connecting a first conduction electrode of said first transistor, a first conduction electrode of said second transistor, and said first resistor to a common node;
d. a diode connected in series with said first resistor and the control electrode of said second transistor, said diode and said first resistor having a common junction therebetween;
e. a second resistor connected to the common junction of said first resistor and said diode;



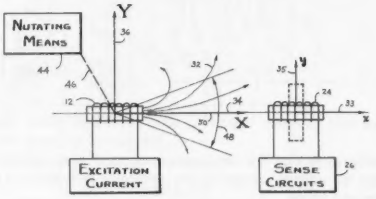
f. a third resistor;
g. means connecting the control electrode of said first transistor, the second conduction electrode of said second transistor, and said third resistor to another common node;
h. means applying in use an input voltage from a generator to be regulated to the first mentioned common node;
i. means defining a circuit path from the second conduction electrode of said first transistor to an exciting circuit of the generator; and
j. means defining a common conductive path between said second resistor, said third resistor, and the exciting circuit of the generator.

3,868,564
SYNCHRONOUS ELECTRIC MACHINE
Vladimir Semenovich Arutjunian, UL. Marxa, 8 kv. 18, and Vigen Khachaturovich Mirimanian, UL. charentsa, 9, kv. 20, both of Erevan, U.S.S.R.
Continuation-in-part of Ser. No. 260,737, June 8, 1972,. This application Jan. 10, 1974, Ser. No. 432,337
Int. Cl. H02p *9/14*
U.S. Cl. 322—59 **2 Claims**



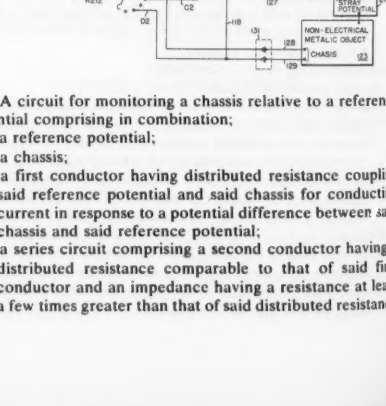
1. A synchronous electric machine comprising an excitation winding, a rectifier energizing said excitation winding, and a three-phase armature winding; said three-phase armature winding having at least two circuits in each phase; said two circuits of each phase being wound with different pitches; the like terminals of said circuits of each phase being interconnected to form a terminal of a respective phase of said machine; the free terminals of the circuits of all the phases with one winding pitch being interconnected to form a neutral point; the free ends of the circuits of all the phases with the other winding pitch being interconnected to form another neutral point; said rectifier being connected to said neutral points.

3,868,565
OBJECT TRACKING AND ORIENTATION DETERMINATION MEANS, SYSTEM AND PROCESS
Jack Kuipers, 3085 Baker Park Dr. S.E., Grand Rapids, Mich. 49508
Filed July 30, 1973, Ser. No. 383,688
Int. Cl. G01r *33/02*
U.S. Cl. 324—34 R **22 Claims**



1. An object locating system which comprises:
a. means for radiating a directable nutating field about a pointing vector direction;
b. means located at the object to be tracked, for sensing the nutating field; and
c. means for determining the direction to the object relatiave to the coordinate frame of the radiating means.

3,868,566
SYSTEM FOR MONITORING CHASSIS POTENTIAL RELATIVE TO A REFERENCE
Charles Henry Parsons, Monroe, and Jay Richard Feldman, Fairfield, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.
Filed Apr. 2, 1973, Ser. No. 347,319
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **1 Claim**



1. A circuit for monitoring a chassis relative to a reference potential comprising in combination;
a. a reference potential;
b. a chassis;
c. a first conductor having distributed resistance coupling said reference potential and said chassis for conducting current in response to a potential difference between said chassis and said reference potential;
d. a series circuit comprising a second conductor having a distributed resistance comparable to that of said first conductor and an impedance having a resistance at least a few times greater than that of said distributed resistance

and with said series circuit in parallel with said first conductor for conducting current in response to a potential difference between said chassis and said reference potential;

e. first and second frequency sensitive potential detecting means in parallel with said impedance for monitoring the potential across said impedance, said last named potential being a function of the potential between said chassis and said reference potential; and

f. a power source in parallel with said impedance and having a predetermined frequency, which differs from that of any power supply coupled to any apparatus contained within said chassis, for providing current to said first conductor and said series circuit, and wherein said first and second frequency sensitive potential detecting means respond to, and reject, respectively, signals of said predetermined frequency; whereby any potential to which said potential detecting means responds, may be identified as including, or not including, said predetermined frequency.

3,868,567

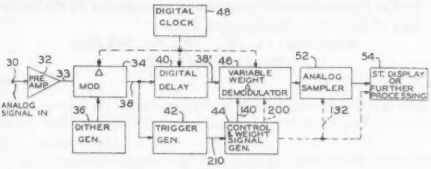
MEASUREMENT OF ST DEPRESSION OF ELECTROCARDIOGRAMS

Philip A. Ekstrom, Seattle, Wash., assignor to Board of Regents, University of Washington, Seattle, Wash.

Filed Nov. 26, 1973, Ser. No. 419,133

Int. Cl. G01r *23/16*

U.S. Cl. 324—77 A **20 Claims**



1. A method for determining the average ST segment depression of an electrocardiogram (EKG) waveform relative to the PQ segment of the same EKG waveform comprising the steps of:

a. delta modulating said EKG waveform to produce a digital representation thereof;

b. delaying said digital representation;

c. delta demodulating the digital representation to directly yield said average ST depression; said delay being sufficient to allow the R portion of said EKG waveform to initiate operation of said demodulating step.

3,868,568

SPECTRUM ANALYZER

Hitoshi Ashida; Kenichiro Yasaka; Motosuke Tanabe, and Yuuji Yoshino, all of Gyoda City, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

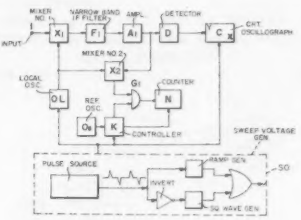
Filed June 18, 1973, Ser. No. 370,674

Claims priority, application Japan, June 20, 1972, 47-615243

Int. Cl. G01r *23/16*

U.S. Cl. 324—77 CS **4 Claims**

1. A spectrum analyzer comprising, a local oscillator having voltage controlled frequency, first mixer means coupled to receive a spectrum of input frequencies and to mix them with said frequency from the local oscillator and produce intermediate frequencies, narrow band filter means coupled to receive said intermediate frequencies and to select substantially one frequency thereof, second mixer means connected to mix said local oscillator frequency and the output of said filter means and deliver an output frequency corresponding with a selected input frequency, counter means, timed-interval gate means operative when actuated to admit cycles of said output frequency of the second mixer means into said counter means, waveform generator means operative to generate series of waveforms including interspersed ramp waveforms and square wave forms, the output of said series of waveforms controlling said voltage controlled oscillator to sweep or fix the frequency thereof, oscillograph means having a first axis input connected



to receive for display components of intermediate frequencies selected by the filter means and having a second axis input connected to receive said waveforms to sweep the oscillograph means, and said square waveform being coupled to actuate said gate means.

3,868,569

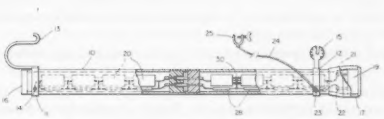
APPARATUS AND METHOD FOR DISTINGUISHING BETWEEN ENERGIZED AND INDUCED VOLTAGES ON HIGH VOLTAGE POWER LINES

Carl H. Faust, Berks & Morris Rd, R.D. 2, Lansdale, Pa. 19446

Filed May 8, 1973, Ser. No. 358,295

Int. Cl. G01r *1/30, 1/06*

U.S. Cl. 324—126 **1 Claim**



1. Apparatus for distinguishing between energized and induced high voltage lines, comprising:

a. capacitance means for providing a net effective capacitance, said capacitance means comprising a plurality of capacitors in series, each such capacitor having a resistor connected in parallel therewith;

b. current reading means, in series combination with said capacitor means, for indicating current flow through said capacitance means;

c. first electrical connecting means, for connecting a first terminal of said series combination to a high voltage line;

d. second electrical connecting means, for connecting a second terminal of said series combination to a system ground reference;

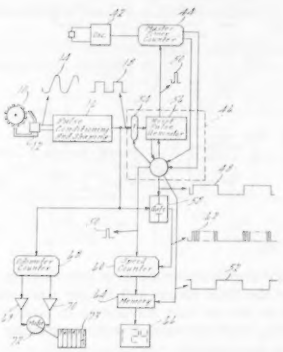
e. said current reading means having a range adapted such that when said apparatus is connected between a high voltage line and system ground, there is provided a reliable indication whether or not said line is energized, said current reading means being a direct reading meter; and

f. a housing for containing said apparatus, said housing having a cap at the end thereof adjacent to said first connecting means, said cap being adapted to be easily expelled from said housing upon generation of pressure within said housing.

3,868,570
ELECTRONIC DIGITAL SPEEDOMETER

Joseph J. Kopera, Jr., Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 28, 1973, Ser. No. 401,745
Int. Cl. G01p 3/48
U.S. Cl. 324—166 4 Claims



1. In a motor vehicle, an electronic digital speedometer comprising:

means for receiving a series of pulses representing the movement of the vehicle,

pulse shaping means electrically connected to said receiving means for shaping each of said pulses into a substantially rectangular waveshape.

timing means for generating a plurality of pulses at predetermined intervals independently of said pulses from said pulse shaping means,

control means responsive to the pulses from said timing means and the pulses from said pulse shaping means for generating a gate control signal, a counter control signal and a memory strobe signal upon the simultaneous occurrence of both of said pulses,

a counter responsive to said counter control signal for clearing said counter,

gate means responsive to said gate control signal for gating said pulses from said pulse shaping means to said counter,

memory means responsive to said counter and said memory strobe signal for retaining the count in said counter during the interval between consecutive gate control signals,

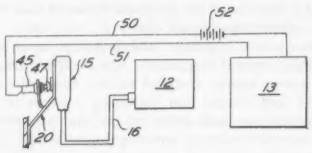
digital display means responsive to the count in said memory means for displaying the count in said memory, said count representing the speed of said motor vehicle, and a strobe interval computer responsive to the count in said memory means and the updated count in said counter for determining the interval between succeesive displays of said display means according to the difference between each of said memory count and said updated count and generating said memory strobe signal in response to said determination.

3,868,571
CB MICROPHONE-AM/FM RADIO CONTROL WITH AM-FM RADIO CUT OFF SWITCH AND MICROPHONE HOLDER

Lawrence J. Greiner, 209 West Broad St., Burlington, N.J.

Filed Nov. 12, 1973, Ser. No. 414,991
Int. Cl. H04b 1/38; H04m 11/00; H01h 3/16
U.S. Cl. 325—15 6 Claims

1. In combination, a radio, a CB microphone including a body and a headed shank projecting from the body, and a holder for said microphone, said holder comprising a base, plate means upstanding from said base and of a thickness approximating the shank dimension between said body and head, said plate means having a generally upwardly opening slot adapted to slidably and gravitationally receive said shank with the body on one side of said plate means and the shank head on the other side of said plate means, and a resiliently



biased normally open switch carried by said base and connected to said radio, and a button located in said switch for sliding engagement by said shank head when said shank is slid into said slot and configured to be shiftable by said head engagement for closing said switch, whereby said switch is open when the microphone is removed from said holder for disabling said radio.

3,868,572
AUDIO TRANSMISSION AND RECEPTION ASSEMBLY

Rubin P. Kaufman, San Diego; Jack B. Rosenfeld, San Francisco, and Elaine Schiller, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 342,104
Int. Cl. H04b 1/38
U.S. Cl. 325—16 4 Claims

1. An audio transmission and reception assembly comprising:

a cable including multiple electrical conductors;

a breakaway connector at one end of said cable for connecting said multiple electrical conductors to a transmitting and receiving radio;

a waterproof enclosure at the other end of said cable for receiving said multiple electrical conductors;

an electro-audio transducer supported within said waterproof enclosure for converting signals received from said electrical conductors into audio messages;

a hollow tubular conduit connected to conduct said audio messages to the entrance of the ear canal of the user;

said conduit having a capillary portion connected adjacent said electro-audio transducer;

audio responsive means contained within said waterproof enclosure and sealed from the outside environment by a protective resilient membrane for converting audio energy received through said resilient membrane into commensurate electrical signals; and

switch means supported on said waterproof enclosure for selectively connecting the electrical signals developed by said audio responsive means to said transmitting and receiving radio through said multiple electrical connectors.

3,868,573

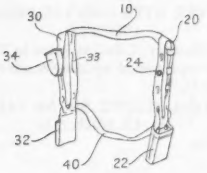
SHOULDER HOLSTER COMMUNICATION DEVICE

Jack N. Holcomb, and Hans D. Sylten, both of Ft. Lauderdale, Fla., assignors to Jack Holcomb, Ft. Lauderdale, Fla.

Filed Apr. 23, 1973, Ser. No. 353,556

Int. Cl. H04b *1/38*

U.S. Cl. 325—16 **2 Claims**



1. A personal communication device for providing concealed radio communications between the user and another party, comprising:

a side pouch arrangement including a downwardly depending looped strap resting upon one of the user's shoulders and through which the user's arm passes, and a pouch at the lower end of the looped strap which contains a radio transmitter, the looped strap being of such a length that the transmitter pouch will be positioned at the user's side approximately at elbow level,

a second side pouch arrangement including a downwardly depending looped strap resting upon the user's other shoulder and through which the user's other arm passes, and a pouch at the lower end of the looped strap which contains a radio receiver, the looped strap being of such a length that the receiver pouch will be positioned at the user's side approximately at elbow level,

a strap extending horizontally across the upper back of the user and connecting at each end the top portion of each of the looped straps to hold the looped straps on the user's shoulders,

a second strap extending horizontally across the lower back of the user and connecting at each end the looped straps adjacent the pouches to assist in holding the pouches in position,

a speaker on the front portion of one of the looped straps positioned approximately adjacent the shoulder and electrically connected to the receiver,

a microphone on the front portion of the other looped strap positioned approximately adjacent the shoulder and electrically connected to the transmitter,

transmitting and receiving aerials connected to their respective units and supported along their length by said looped straps, and

electrical means interconnecting the transmitter and receiver including a switch adjacent one of the pouches at normal elbow level which is activated by pressure of the user's arm for controlling operation of the radio units so that one of said transmitting and receiving units is operative while the other is inoperative.

3,868,574

ARRANGEMENT FOR THE TRANSMISSION OF INFORMATION SIGNALS BY PULSE CODE MODULATION

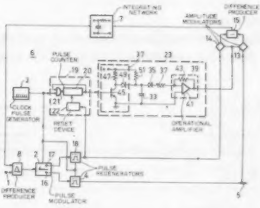
Gibert Marie Marcel Ferrieu, Bievres, France, and Johannes Wilhelmus Glasbergen, Bussum, Netherlands, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Aug. 29, 1973, Ser. No. 392,792

Claims priority, application France, Sept. 4, 1972, 72.31270

Int. Cl. H04b *1/00*

U.S. Cl. 325—38 B **19 Claims**



1. A transmitter for the transmission of information signals by pulse code modulation, comprising a pulse modulator for providing output pulses, the output pulses from said pulse modulator comprising the output of said transmitter, a clock pulse generator connected to an input of the modulator, a pulse series analyzer means connected to the output of the clock pulse generator and to the output of the pulse modulator for analyzing successively occurring pulse series from the modulator within fixed time intervals of at least three successive pulses from the clock pulse generator and for supplying a pulsatory output signal in response to a modulator output pulse series exceeding a predetermined modulation index within the fixed time intervals, a first non-linear integrating network connected to the output of the pulse series analyzer for supplying a continuously variable dynamic control signal, the first non-linear integrating network comprising a storage element and a non-linear resistance element connected to the storage element, the first non-linear integrating network having a time constant that decreases with increasing signal level, a switched supply source connected to the output of the first non-linear integrating network, means connecting the pulse modulator output to the switched supply source for switching the output of the first non-linear integrating network in the rhythm of the pulsatory output from the pulse series analyzer, the dynamic control signal being derived from the non-linear resistance element of the first non-linear integrating network, a second integrating network connected to the output of the switched supply source, a difference producer having a first input connected to the output of the second integrating network and having a second input for receiving the information signals to be transmitted, the output of the difference producer being connected to the pulse modulator.

3,868,575

LIMITED-RANGE RADIOCOMMUNICATION SYSTEM WITH DIRECTION-INDICATING SIGNALING MEANS

Jean Raymond Narbeits-Jaureguy, and Henri Billottet, both of Paris, France, assignors to Thompson-CSF, Paris, France

Filed May 24, 1973, Ser. No. 363,730

Claims priority, application France, May 26, 1972, 72.18881

Int. Cl. H04b *1/00*

U.S. Cl. 325—51 **15 Claims**

1. In a limited-range radiocommunication system for the sending of messages from a fixed station provided with high-frequency information-transmitting means to a plurality of mobile stations provided with receiving means for high-

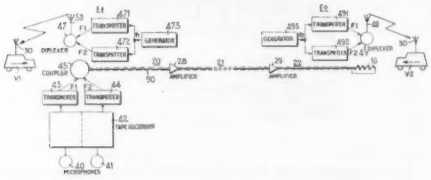
frequency energy, said mobile stations traveling in either of two directions along a predetermined route with a first and a second point of entry at opposite ends of said route, the improvement wherein:

said fixed station is provided with a radiating transmission line connected to said information-transmitting means, said line extending along said route;

said information-transmitting means comprises a source of a first and a second carrier frequency, respectively allotted to travel in a first direction from said first to said second point and to travel in a second direction from said second to said first point, individually modulated with information relevant to the corresponding direction of travel;

further comprising—

a first ancillary short-range transmission station proximal to said first point for radiating both said first and said second



carrier frequency, modulated with a first signal frequency, directly to nearby mobile stations entering upon said route in said first direction; and

a second ancillary short-range transmission station proximal to said second point for radiating both said first and said second carrier frequency, modulated with a second signal frequency, directly to nearby mobile stations entering upon said route in said second direction;

each of said mobile stations including receiving means for picking up said carrier frequencies from said transmission line and from either of said ancillary transmission stations, detector means for said first and second signal frequencies connected to said receiving means, and message-reproducing means connected to said detector means, said receiving means being selectively tunable to either of said carrier frequencies in accordance with the output of said detector means.

3,868,576

DEVICE FOR AUTOMATIC EQUALIZATION

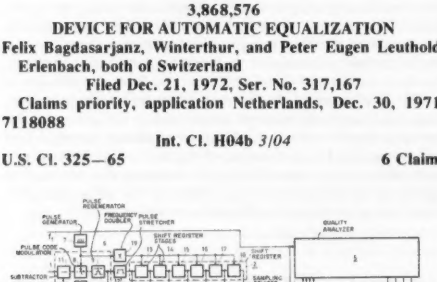
Felix Bagdasarjanz, Winterthur, and Peter Eugen Leuthold, Erlenbach, both of Switzerland

Filed Dec. 21, 1972, Ser. No. 317,167

Claims priority, application Netherlands, Dec. 30, 1971, 7118088

Int. Cl. H04b *3/04*

U.S. Cl. 325—65 **6 Claims**



1. A device for automatic equalization of the transmission characteristic formed by the amplitude-versus-frequency and the phase-versus-frequency characteristic of a transmission band associated with a transmission path for the transmission of synchronous information signals, characterized in that said device comprises analog-to-digital conversion means for converting received analog signals to digital form, a plurality of parallel equalizing networks comprising a shift register to whose input said digital signals are applied and a matrix network connected to taps of the shift register and comprising weighting elements which have values defining for each equalizing network a different transmission characteristic thereby producing a plurality of different equalized signals, said device further comprising circuit means connected to the outputs of each equalizing network, a plurality of blocking stages each associated with one of said plurality of equalizing networks and coupled to said equalizing network through said circuit means, signal quality analyzing means connected to said circuit means for evaluating the quality of each of said plurality of equalized signals, said analyzer being further connected to said blocking stages and supplying a control signal to unblock one of said stages so that an equalized signal of satisfactory quality appears at the output thereof.

3,868,577

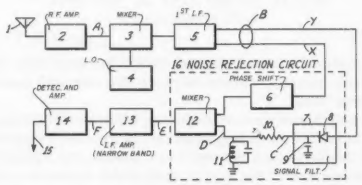
RADIO RECEIVER WITH IMPULSE NOISE REDUCING CIRCUIT

Arthur D. Watt, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 21, 1955, Ser. No. 542,118

Int. Cl. H04b *1/10*

U.S. Cl. 325—476 **2 Claims**



1. In a receiver, means for receiving electromagnetic energy including an intelligence signal and a noise component, means for applying said energy to a first and second terminal in such a manner that the energy on said first terminal is in phase opposition to the energy on said second terminal, a mixer, a variable phase shifter connected between said mixer and first terminal, a ringing circuit, a demodulator connected between said ringing circuit and said second terminal and means for connecting said ringing circuit to said mixer.

3,868,578

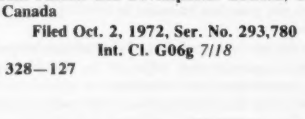
METHOD AND APPARATUS FOR ELECTROANALYSIS

Keith B. Oldham, Peterborough, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Oct. 2, 1972, Ser. No. 293,780

Int. Cl. G06g *7/18*

U.S. Cl. 328—127 **10 Claims**



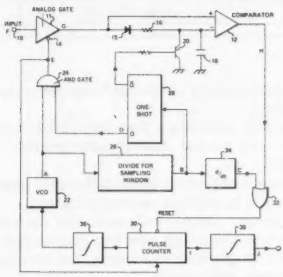
1. An electrical circuit for providing an output signal having a mathematical operation relationship to an input signal, said operation being semi-integration, comprising a resistance element and an operational amplifier in series, the input being

applied across the said resistance element and the operational amplifier input, the output being taken across the output of the operational amplifier, the said operational amplifier having a feedback path from output to input connected to the input of a long transmission line section.

3,868,579
REGENERATIVE, SYNCHRONOUS, PULSE PHASE DEMODULATOR

Douglas M. Dilley, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1973, Ser. No. 423,026
Int. Cl. H03k *9/04*
U.S. Cl. 329—107 **3 Claims**



1. A pulse phase demodulator for demodulating pulse phase modulated signals transmitted with a pulse period constrained to an integral number of time units and without reference pulses,

a. an input terminal for receiving said pulse phase modulated signals,

b. first pulse generating means for generating a plurality of pulses,

c. second pulse generating means coupled to the output of said first pulse generating means and being responsive to a first number of predetermined pulses from said first pulse generating means for generating an output gate pulse of a predetermined width,

d. gate circuit means coupled to said first pulse generating means and to said second pulse generating means for gating a predetermined number of pulses from said first pulse generating means determined by the width of said gate pulse,

e. gating means coupled to said input terminal and to said gate circuit means for sampling said input signal at the occurrence of each of said gated pulses,

f. signal selecting circuit means coupled to said gating means for selecting the largest sampled signal occurring during said gating interval,

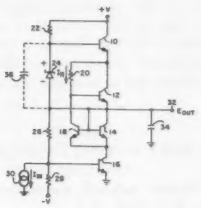
g. time measuring circuit means coupled to said signal selecting circuit means and to said gate circuit means for measuring the time interval between the occurrence of said largest sampled signal and the end of said sampling interval and providing an output voltage having an amplitude proportional to said time interval,

h. feedback circuit means coupled between the output of said time measuring circuit means and said first pulse generating means to provide a correction signal to adjust the sampling frequency to the mean input pulse repetition frequency.

3,868,580
BOOTSTRAPPED AMPLIFIER

Carl R. Battjes, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 12, 1973, Ser. No. 332,052
Int. Cl. H03f *3/42, 1/00*
U.S. Cl. 330—18 **11 Claims**



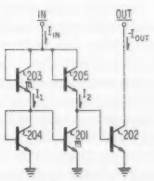
1. An amplifier comprising first amplifying means serially disposed between a first power supply level and a second power supply level and including an output terminal therebetween to which a capacitive load is connected, both of said amplifying means comprising semiconductor means of a single conductivity type,

wherein said first amplifying means includes at least a grounded emitter stage and negative feedback means coupled from output to input, said first amplifying means being coupled to receive input signals of opposite polarity and generate an output voltage signal in response thereto, and said second amplifying means includes at least a common collector stage being coupled by bootstrapping means connected between said output terminal and the base of said common collector stage for receiving a voltage signal which is displaced a substantially constant amount from said output voltage signal from said first amplifying means to provide drive thereto so that both of said first and second amplifying means provide a substantially continuous output waveform while being alternately responsive to said input signals, one of said amplifying means conducting current to said capacitive load in response to an input signal of one polarity and the other of said amplifying means conducting current from said capacitive load in response to an input signal of opposite polarity.

3,868,581
CURRENT AMPLIFIER

Adel Adbel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,175
Int. Cl. H03f *3/42*
U.S. Cl. 330—19 **4 Claims**



1. A current amplifier comprising:

an input, a common and an output terminal;

first and second transistors operated at substantially the same absolute temperature T, each having an emitter electrode connected to said common terminal and each having a base and a collector electrode, each having a base-emitter junction between its base and emitter elec-

trodes, said first transistor collector electrode being direct current conductively coupled to said input terminal and directly connected to said second transistor base electrode;

means for coupling said second transistor collector electrode to said output terminal, and

a direct-coupled collector-to-base degenerative feedback connection of said first transistor consisting of means responsive to the absolute temperature T to provide between a first and a second of its terminals a potential proportional to T, said first and said second terminals being respectively connected to said first transistor collector electrode and to said first transistor base electrode.

3,868,582
AF AMPLIFIER HAVING CONSTANT CURRENT CONSUMPTION

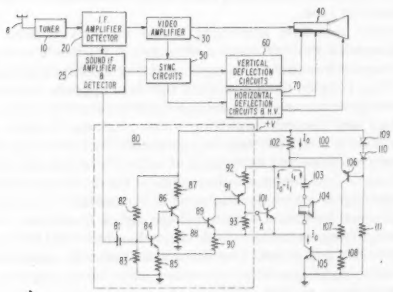
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,782

Claims priority, application Great Britain, Nov. 13, 1972, 52362/72

Int. Cl. H03f 3/04

U.S. Cl. 330—22 **6 Claims**



1. An amplifier circuit providing substantially constant current consumption comprising:

a source of direct operating voltage having first and second terminals;

a source of signals to be amplified;

at least first and second transistors having collector-emitter paths series coupled between said first and second terminals of said source of voltage;

utilization means coupled in parallel across said first transistor;

means biasing said second transistor for providing a substantially constant current flow therein,

said biasing means including a direct current impedance series connected between said first terminal of said source of voltage and said first transistor; a third transistor having a main conduction path series coupled between the junction of said impedance and said first transistor and at least one resistor connected to said second terminal of said voltage source, said second transistor having a control electrode connected to said main conductor path of said third transistor, said third transistor having a control electrode coupled to a point of reference potential for enabling said third transistor to alter the bias of said second transistor for maintaining said current substantially constant; and

means for coupling said source of signals to said first transistor for causing current variations in said first transistor corresponding to said signals, said first transistor current variations producing substantially equal and opposite current variations corresponding to said signals in said utilization means.

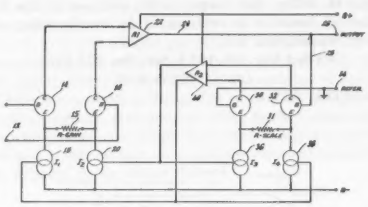
3,868,583
HIGH-PERFORMANCE SOLID-STATE AMPLIFIER SYSTEM

Heinrich F. Krabbe, San Jose, Calif., assignor to Analog Devices, Inc., Cambridge, Mass.

Continuation of Ser. No. 61,653, Aug. 6, 1970, abandoned. This application Sept. 29, 1972, Ser. No. 293,438

Int. Cl. H03f 3/68

U.S. Cl. 330—30 D **3 Claims**



1. A high-performance solid-state integrated-circuit amplifier comprising:

an input section including a first differential amplifier having first and second differentially-operable transistor amplifiers;

amplifier means responsive to the differential output of said input section to produce an output signal;

first and second differentially-operable current sources connected in series with said first and second transistor amplifiers, respectively, to supply the currents flowing therethrough, respectively;

control terminals for said first and second current sources respectively;

a negative feedback circuit responsive to the output of said amplifier means and producing a feedback signal for said control terminals so as to tend to maintain the current through said first and second transistor amplifiers constant;

said feedback circuit comprising a second differential amplifier including third and fourth differentially-operable transistor amplifiers and having its input coupled to the output of said amplifier means; and

third and fourth differentially-operable current sources having third and fourth control terminals driven by said feedback signal together with said first and second control terminals respectively, said third and fourth current sources being connected in series with said third and fourth transistor amplifiers respectively to tend to maintain constant the currents therethrough.

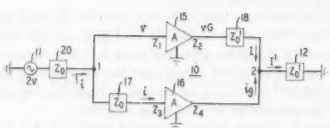
3,868,584
AMPLIFIER WITH INPUT AND OUTPUT MATCH

Henry Richard Beurrier, Chester Township, Morris County, N.J.

Filed Feb. 8, 1971, Ser. No. 113,200

Int. Cl. H03f 3/68

U.S. Cl. 330—124 R **13 Claims**



1. An amplifier for coupling between a signal source and an output load comprising:

first and second parallel-connected active stages;

one of said stages having an input impedance that is greater than the impedance of said signal source, while the other of said stages has an input impedance that is less than the impedance of said signal source;

an input matching impedance connected in series with the input end of said lower input impedance stage;

one of said stages having an output impedance that is greater than the impedance of said load, while the other of said stages has an output impedance that is less than the impedance of said load;

and an output matching impedance in series with the output end of said lower output impedance stage.

3,868,585

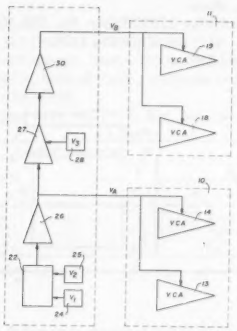
AUTOMATIC CROSSFADING DEVICE

Charles B. Richmond, 1234 W. 6th Ave., Vancouver 9, B.C., Canada

Filed Sept. 10, 1973, Ser. No. 395,728

Int. Cl. H03f *3/68*

U.S. Cl. 330—124 R **18 Claims**



1. Apparatus for smooth exponential cross-fading between first and second voltage controlled amplifying means comprising an exponential ramp voltage generator, said ramp voltage generator having an output and a two-position switch which, when actuated from a first position to a second position, causes the voltage at said output to ramp exponentially in one direction and, when actuated from said second position to said first position, causes the voltage at said output to ramp exponentially in the opposite direction, the output of said ramp voltage generator being fed to a control terminal of said first voltage controlled amplifying means and to an input of inverting voltage amplifying means, whereby the voltage at the output of said inverting voltage amplifying means varies inversely and equally in accordance with variations at its input, the voltage at the output of said inverting voltage amplifying means being applied to a control terminal of said second voltage controlled amplifying means.

3,868,586

DIFFERENTIAL AMPLIFIER HAVING A SHORT RESPONSE TIME

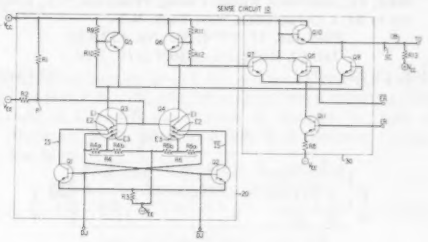
Harold Wilfred Korb, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1973, Ser. No. 418,669

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **10 Claims**

1. A differential amplifier of the type including means responsive to an input signal for generating an intermediate differential signal, characterized by output means operative in response to said input signal for generating an auxiliary signal component in phase with a selected component of said intermediate signal and for combining said auxiliary signal component with said selected intermediate signal component, said output means comprising a transistor having first and second emitters, means for controlling the current in said first emitter in accordance with said selected intermediate signal component and means operative in response to said input signal for varying the current in said second emitter in phase with the current in said first emitter to generate said auxiliary signal component.



3,868,587

CONSTANT PHASE DISTRIBUTED IMPEDANCE

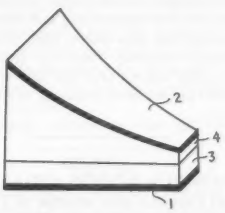
Amos Nathan, Haifa, Israel, and Reed K. Even, Middletown, N.J.

Filed Feb. 22, 1972, Ser. No. 227,715

Claims priority, application Great Britain, Oct. 19, 1971, 48502/71

Int. Cl. H03f *3/14*

U.S. Cl. 330—38 M **7 Claims**



1. An electrical device having an input impedance of substantially constant phase over a finite range of frequencies comprising:

impedance means having a first and a second surface, the maximal distance therebetween being small compared with the later dimensions thereof;

first and second electrically conductive means substantially covering and contiguous to said first and second surfaces, respectively;

one of said lateral dimensions defining length;

where (the law of) said impedance means is constituted so that its impedance per unit length (of said impedance means) is substantially given by

$$z(x) = [R_o e^{-b \quad (x)} + 1/j\omega C_o e^{a \quad (x)}]/[d/dx\ \eta(x)\ ],$$

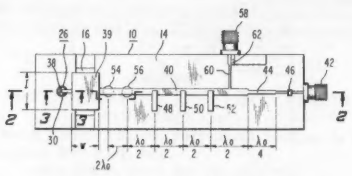
e is the basis of natural logarithms, x is a coordinate measuring said length, C_o and R_o are predetermined non-vanishing constant capacitance and resistance, respectively, a and b are predetermined constants such that their product does not vanish, $\eta(x)$ is a predetermined non-constant function of x, $d/dx\ \eta(x)$ is the derivative of $\eta(x)$ with respect to x, j is the square root of -1, and ω is the angular frequency;

said input impedance being the impedance between said plural conductive means.

3,868,588
MICROWAVE OSCILLATOR OR AMPLIFIER USING PARAMETRIC ENHANCED TRAPATT CIRCUITS

Alfred Schwartzmann, Moorestown; Vitas Anthony Mikenas, Medford Lakes, both of N.J.; John Jerome Thomas, Levittown, Pa., and Kern Konan Chang, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,455
Int. Cl. H03b 7/14; H03f 3/10, 7/00
U.S. Cl. 331—77 **12 Claims**



1. A microwave apparatus comprising:

a microwave transmission line;

a semiconductor element, having a known internal capacitance, capable of generating a microwave signal at a plurality of frequencies which are harmonically related, said semiconductor element having first and second electrodes;

an adjustable coupling means for coupling said semiconductor element to said transmission line so that said semiconductor element is self resonant at one of said harmonically related frequencies;

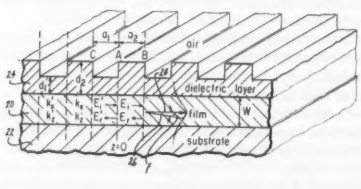
a frequency conversion means coupled to said transmission line, said frequency conversion means utilizing the said self resonance of said semiconductor element for converting energy contained in said harmonically related component frequencies of said microwave signal into energy at a single desired output frequency; and

an output means for transmitting said output frequency to a terminating load impedance, said output means having an electrical frequency resonator providing a parallel circuit coupled across said first and second electrodes, said parallel circuit being resonant at said desired output frequency.

3,868,589
THIN FILM DEVICES AND LASERS

Shyh Wang, El Cerrito, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 296,178, Oct. 10, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,675
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **30 Claims**

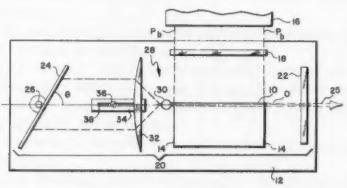


1. A laser comprising an optical waveguide for propagating TE and TM waves of light at a predetermined frequency and guided wavelength therein, said waveguide having a predetermined optical index of refraction and being made of a material transparent to light at said predetermined frequency, means defining at least one boundary layer adjacent to said waveguide such that the propagating TE and TM waves for light at said predetermined frequency extend both within said waveguide and into said boundary layer, said boundary layer having one or more indices of refraction at least a portion of which is less than the index or refraction of said waveguide, one of said waveguide or boundary layer being a laser active material which exhibits gain with respect to light at said predetermined frequency, means associated with said boundary layer or said boundary layer and said waveguide for forming a periodic variation of the index of refraction thereof throughout a region optically coupled to said propagating wave, said periodic variation being arranged for causing a spatial variation of said index of refraction between two values which repeat in a regular pattern and have a periodicity of *-a-* selected from one of the half-integral multiples of the guided wavelength of said light in said waveguide so that said spatial variation produces periodic reflections which progressively interact constructively to modify said propagating wave.

3,868,590
NARROW BANDWIDTH DYE LASER

Irving Itzkan, Boston, and Robert F. Caristi, Stoneham, both of Mass., assignors to AVCO Everett Research Laboratory, Inc., Everett, Mass.

Filed May 2, 1973, Ser. No. 356,304
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 C **10 Claims**



1. In an apparatus for producing stimulated radiation in lasable dye materials, said apparatus including a laser pumping means emitting a beam of pumping radiation generally rectangular in cross section, a cell containing lasable dye material, means for focusing said pumping radiation beam substantially to a line within said cell, and a selective wavelength reflector and a partially reflective means forming an optical cavity with a reflecting axis substantially coincident with the line of focus of said pumping radiation beam for producing a laser beam, the improvement comprising:

a lens system positioned between said cell and said selective wavelength reflector and comprising a first cylindrical lens adjacent said cell for receiving and substantially diverging said laser beam and a second spherical lens positioned between said cylindrical lens and said selective wavelength reflector for receiving and collimating said diverged laser beam to illuminate an increased area of said selective wavelength reflector whereby the bandwidth of the laser beam produced by said apparatus is substantially narrowed.

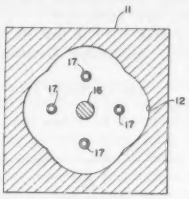
3,868,591
LASER HEAD FOR SIMULTANEOUS OPTICAL PUMPING OF SEVERAL DYE LASERS

Peter B. Mumola, and Belton T. McAlexander, both of Newport News, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 5, 1973, Ser. No. 367,293
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 P **7 Claims**

1. A laser device for providing simultaneous optical pumping of a plurality of lasers in a compact, efficient and reliable manner comprising:

an elongated multi-elliptical cavity having a common focal axis and a plurality of other focal axes spaced around said common focal axis;



a single flashlamp pumping light source located inside said multi-elliptical cavity along said common focal axis; and a different laser located along each of said plurality of other focal axes inside said multi-elliptical cavity whereby the plurality of different lasers are pumped by said single light source.

3,868,592

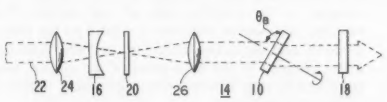
IMPROVED TUNING APPARATUS FOR A DYE LASER

J. Michael Yarborough, Santa Clara, and James L. Hobart, Los Altos Hills, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed May 30, 1973, Ser. No. 365,317

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 C **9 Claims**



1. A method of tuning a dye laser comprising:

placing a birefringent plate within the optical cavity of the dye laser to intersect light reflected within the optical cavity; and

rotating said plate to obtain the desired output wavelength, while maintaining said birefringent plate at the same angle with respect to the reflected light.

3,868,593

HOLLOW-CATHODE LASER TUBE

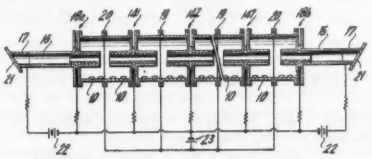
Shuichi Fukuda, and Masao Miya, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 12, 1973, Ser. No. 406,095

Claims priority, application Japan, Oct. 17, 1972, 47-104152; Dec. 5, 1972, 47-122234

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 D **4 Claims**



1. A hollow-cathode metal vapor laser tube comprising a hollow cathode including a plurality of tubular cathode members aligned along a common central axis and axially spaced from one another by a predetermined interval, an anode including a plurality of tubular anode members interposed between adjacent ones of said cathode members and surrounding said cathode members with their axes aligned with said common axis, and means for electrically insulating each of said cathode member—anode member combinations from the neighboring cathode member—anode member combinations, thereby to permit the separate application of excitation power thereto.

3,868,594

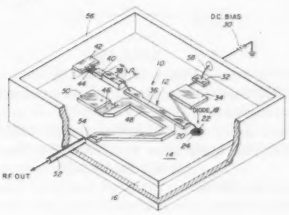
STRIPLINE SOLID STATE MICROWAVE OSCILLATOR WITH HALF WAVELENGTH CAPACITIVE RESONATOR

Gerald M. Cornwell, and William M. Streeton, Jr., both of Marlboro, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 7, 1974, Ser. No. 431,467

Int. Cl. H03b *7/14*

U.S. Cl. 331—99 **7 Claims**



1. A microwave integrated oscillator circuit comprising:

an insulating substrate;

a conductive ground plane contacting one surface of said substrate;

a microwave transmission line formed by a conducting strip bonded to the opposite surface of said substrate;

semiconductor means for generating microwave frequency energy conductively coupled to said transmission line;

resonator means to provide a substantially high impedance at a predetermined resonant frequency conductively coupled in series with said transmission line;

said resonator means comprising capacitor means having a length substantially one-half of a wavelength at said resonant frequency; and

means for coupling said energy from said line to a load.

3,868,595

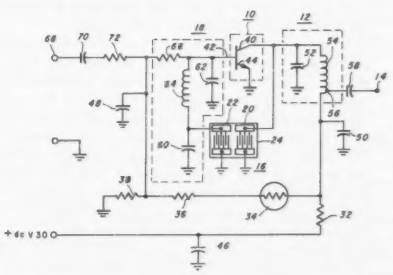
RF OSCILLATOR FREQUENCY CONTROL UTILIZING SURFACE WAVE DELAY LINES

Wallace A. Capps, Jr.; Lemuel D. Groom, III; Clinton S. Hartmann, and Howard G. Vollers, Jr., all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1972, Ser. No. 301,918

Int. Cl. H03b *5/14*

U.S. Cl. 331—108 **4 Claims**



1. A phase shift oscillator including an amplifier having a phase shift network connected between its output and input

ports, wherein the phase shift network is a surface wave delay line having an input transducer and an output transducer, said input and output transducers having a selected number of cycles at operating frequency and whose centers are selectively separated, said selected number of cycles at the operating frequency and separation of the input and output transducers operative to set the amplitude response and the phase response of said surface wave delay line at the peak frequency of the delay line amplitude response and appproximately equal to the frequency of zero phase shift around the oscillator loop, and wherein the selected number of cycles at the operating frequency and the separation of the input and output transducers are arranged to center the zero phase shift of the surface wave device phase line at approximately the maximum operating curve at the center of the resonance curve, and to permit a narrow resonance curve to prevent frequency hopping.

3,868,596

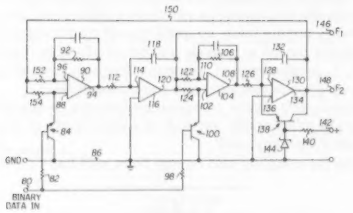
FSK OSCILLATOR

Jerry G. Williford, Tustin, Calif., assignor to Rockwell International Corporation, Dallas, Tex.

Division of Ser. No. 352,368, April 18, 1973, Pat. No. 3,826,999. This application Apr. 25, 1974, Ser. No. 464,002

Int. Cl. H03b *5/24*

U.S. Cl. 331—108 R **2 Claims**



1. Signal frequency generating apparatus comprising, in combination:

first and second integrating means each including input means and output means and providing a substantially 90-degree signal phase shift therethrough;

first connection means, including control input means, for connecting the output means of said first integrating means to said input means of said second integrating means and for providing phase reversal in response to a signal supplied to said control input means thereof;

second connection means, including control input means, for connecting said output means of said second integrating means to said input means of said first integrating means, said second connection means providing a signal phase reversal at a given frequency in response to a signal supplied to said control input thereof; and

switch means, connected to the control inputs of said first and second connection means for setting one or the other of said first and second connection means in the phase reversal condition in response to binary data applied to said switch means.

3,868,597

INTEGRABLE QUARTZ OSCILLATOR CIRCUIT EMPLOYING FIELD EFFECT TRANSISTORS

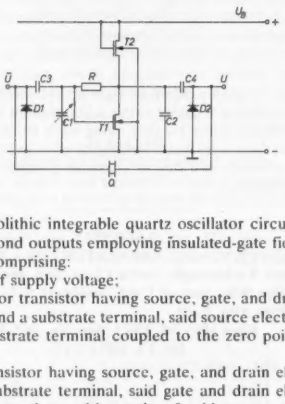
Wolfgang Gollinger, Gundelfingen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 7, 1974, Ser. No. 467,751

Claims priority, application Germany, May 11, 1973, 2323858

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **1 Claim**



1. A monolithic integrable quartz oscillator circuit having first and second outputs employing insulated-gate field-effect transistors comprising:

a source of supply voltage;

an oscillator transistor having source, gate, and drain electrodes and a substrate terminal, said source electrode and said substrate terminal coupled to the zero point of the circuit;

a load transistor having source, gate, and drain electrodes and a substrate terminal, said gate and drain electrodes coupled to the positive pole of said source of supply voltage, said source electrode coupled to the drain electrode of said oscillator transistor, and said substrate terminal coupled to the zero point of the circuit, said load transistor having a conductivity equivalent to that of said oscillator transistor;

a resistor for fixing the D.C. operating point of the circuit having first and second terminals, said first terminal coupled to the gate electrode of said oscillator transistor and said second terminal coupled to the junction of the drain electrode of said oscillator transistor and the source electrode of said load transistor;

an adjustable capacitor for providing fine adjustment of the oscillator frequency coupled between said first terminal and the zero point of the circuit;

a first capacitor coupled between said second terminal and the zero point of the circuit;

second and third capacitors coupled in series with said resistor, said second capacitor coupled between said first output and said first terminal, and said third capacitor coupled between said second output and said second terminal;

a quartz crystal coupled between said first and second outputs; and

first and second clamping diodes each having an anode coupled to the zero point of the circuit, the cathode of said first diode coupled to said first output, and the cathode of said second diode coupled to said second output.

3,868,598

COMBINED POTENTIOMETER AND AMPLIFIER CIRCUITRY

Reinhard Falke, Boblingen, Germany, assignor to Hewlett-Packard GmbH, Boblingen, Germany

Filed May 3, 1974, Ser. No. 466,761

Claims priority, application Germany, June 7, 1973, 2329026

Int. Cl. H03g *3/22*

U.S. Cl. 330—130 **5 Claims**

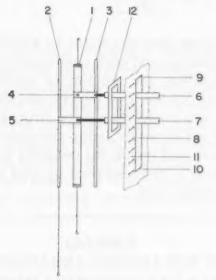
1. Circuitry for adjusting the level between two output signals of a potentiometer, including a resistive body, two

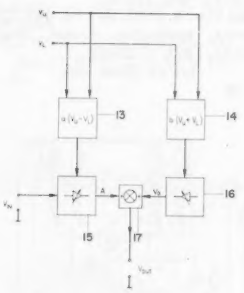
tapping elements each slidably mounted and conductively connectable to different points on the resistive body, actuating members mechanically connected to each of the tapping elements, limiter means disposed to limit the distance between extreme positions of each of the actuating members can have at a time, auxiliary limiter means disposed with respect to both actuating members and movable therewith to limit the variable actual distance between these actuating members to a selected value which determines the maximum possible level between the two output signals of the potentiometer.

5. Signal translating circuitry comprising:

a gain controlled amplifier circuit having a gain control input and another input for receiving an applied signal;

a subtraction network connected to receive two signals which determine the selected upper and lower output levels of the gain controlled amplifier, said subtraction network being connected to apply to the gain control





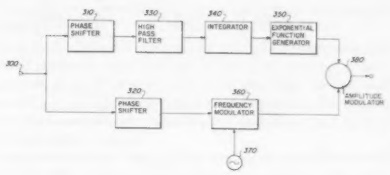
input a gain control signal which is proportional to the difference between these two signals which determine the selected upper and lower output levels, a summation network like wise connected to receive these two signals which determine the selected upper and lower output levels for producing an offset signal which is proportional to their sum, and circuit means connected to receive an output signal of the gain controlled amplifier as well as the offset signal for producing an amplified output signal of a waveform which, at a different scale, corresponds to the waveform of the applied signal at the input of the gain controlled amplifier and has a rise time interval substantially equal to the rise time interval of the applied signal and has upper and lower extreme values adjusted according to the two signals which determine the selected upper and lower output levels and which are applied to the subtraction and summation networks, respectively.

3,868,599

SINGLE SIDEBAND FREQUENCY MODULATION SYSTEM

Takashi Hirasaki, Sagamihara, and Gojiro Suga, Tokyo, both of Japan, assignors to Rank Xerox, Ltd., London, England

Filed Dec. 17, 1973, Ser. No. 425,451
Int. Cl. H03c *1/50, 3/00*
U.S. Cl. 332—17 **2 Claims**



1. Apparatus for modulating an input signal comprising

means separating said input signal into a high-frequency component signal and a low-frequency component signal,

means supplying a carrier signal,

means frequency modulating said carrier signal with said low-frequency component signal,

means single sideband frequency modulating said carrier signal with said high frequency component signal, and

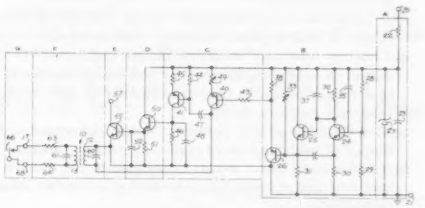
means combining the low-frequency modulated carrier with the high-frequency modulated carrier.

3,868,600

ELECTRICAL ISOLATION DEVICE AND METHOD

Jerry H. Polson, Boulder, Colo., assignor to Contel Corporation, Boulder, Colo.

Filed May 29, 1973, Ser. No. 364,454
Int. Cl. H03c *1/08;* **H03b** *3/16*
U.S. Cl. 332—31 R **12 Claims**

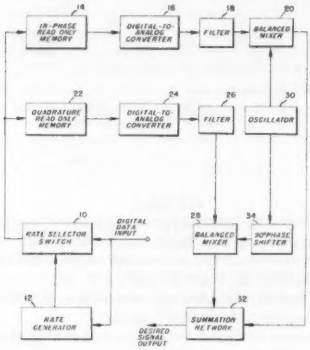


1. A method of transmitting information between isolated circuits, comprising: generating a constant current oscillating signal, tuning both the primary winding circuit and secondary winding circuit of an isolation transformer to resonate at about the frequency of the oscillating signal, applying the oscillating signal to the primary winding of the isolation transformer, concurrently applying the oscillating signal to an amplifier through a direct connection thereto, varying the electrical characteristics of the circuit associated with the secondary winding of the transformer by providing an information signal thereto to vary the impedance of the circuit connected to the secondary winding, varying the strength of the oscillating signal inversely to the variation of the impedance connected to the secondary winding while maintaining the resonate condition of the transformer, and driving the amplifier in response to variation of the strength of the oscillating signal to provide an amplifier output on the primary side of the isolation transformer corresponding to the isolated information signal applied to the secondary winding side circuit of the isolation transformer.

3,868,601
DIGITAL SINGLE-SIDEBAND MODULATOR

John W. MacAfee, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 18, 1973, Ser. No. 371,316
Int. Cl. H03c 1/60, 1/52
U.S. Cl. 332—45 4 Claims



1. Modulator apparatus comprising:

input means for receiving digital data;

generator means connected to said input means and being responsive to said digital data to produce trigger pulses at a selectively predetermined rate;

in-phase read-only memory means connected to the output of said generator means and being responsive to said trigger pulses to store the binary representation thereof on a selectively predetermined waveform and wherein each binary word stored represents a distinct amplitude of said waveform;

first digital-to-analog converter means connected to the output of said in-phase read-only memory means;

quadrature read-only memory means connected to the output of said generator means and being responsive to said trigger pulses in the same manner as said in-phase read-only memory means,

second digital-to-analog converter means connected to the output of said quadrature read-only memory means;

first and second mixer means connected to the outputs of said first and second digital-to-analog converter means, respectively;

oscillator means connected at the output to said first mixer means to provide at the output thereof an in-phase carrier signal, and being further connected through a 90° phase shifter to said second mixer to provide a quadrature carrier signal; and,

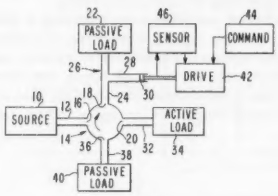
summation network means connected at the input to the outputs of said first and second mixer means and being responsive to said in-phase and quadrature carrier signals to provide a single-sideband, suppressed carrier signal.

3,868,602
CONTROLLABLE MICROWAVE POWER ATTENUATOR

Gard E. Meddaugh, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 20, 1973, Ser. No. 399,209
Int. Cl. H01p 1/22
U.S. Cl. 333—17 11 Claims

1. Apparatus for attenuating guided electromagnetic energy passing along a transmission path from a source to an active load at any frequency within the operating frequency range of said transmisson path, said apparatus comprising nonreciprocal isolation means disposed along said transmission path, said isolation means comprising a circulator having first, second and third ports, said second port being located intermediate said first and third ports along said transmission path; first passive load means disposed along said transmission path, said first passive load means being capable of absorbing a sufficient amount of said energy to provide a desired maximum attenuation of said energy; first waveguide means for coupling said energy from said source to said circulator through said first port; second waveguide means for coupling at least a portion

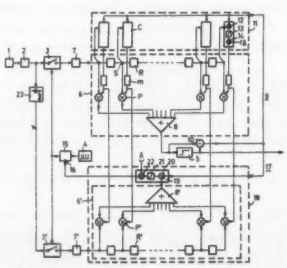


of said energy from said circulator to said first passive load means through said second port; continuously variable control means for controlling the amount of said energy which is absorbed by said passive load means; said continuously variable control means comprising a tee structure having a variable short, said tee structure being connected to said second waveguide means; and means for coupling the greater part of said energy which is not absorbed by said first passive load means to said active load.

3,868,603
AUTOMATIC EQUALIZING ARRANGEMENT FOR A DATA TRANSMISSION CHANNEL

Loic Bernard Yves Guidoux, Saint Michel sur Orge, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Mar. 8, 1974, Ser. No. 449,278
Claims priority, application France, Mar. 9, 1973, 73.08476; June 25, 1973, 73.23052
Int. Cl. H04b 3/04
U.S. Cl. 333—18 16 Claims



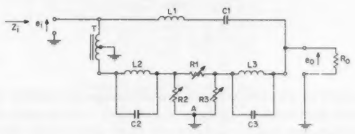
1. An automatic equalizing arrangement for a data transmission channel, including a first transversal filter coupled between a first sampler for the data signal at the output of the transmission channel and a data-restoring decision circuit, the coefficients of the first transversal filter being adjusted by a coefficient adjusting arrangement in a first control loop so as to minimize a predetermined function of an error signal originating from a difference producer connected between input and output of the decision circuit and being applied to said first control loop, characterized in that means are provided for varying the phase of the sampling instants so as to minimize said predetermined function of said error signal, said means for varying the phase of the sampling instants including a

phase adjusting arrangement in a second control loop, said error signal being applied to said second control loop.

3,868,604
CONSTANT RESISTANCE ADJUSTABLE SLOPE EQUALIZER

Ben H. Tongue, West Orange, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Apr. 8, 1974, Ser. No. 458,498
Int. Cl. H03h 7/14
U.S. Cl. 333—28 R **6 Claims**

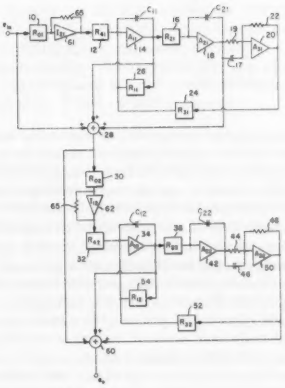


1. A constant resistance adjustable attenuation versus frequency slope equalizer having, in combination, input and output terminals have in-phase and out-of-phase paths therebetween, a resonant network connected in the in-phase path, a dual resonant network divided into a pair of equal halves separated by a constant resistance attenuator connected therebetween and in the out-of-phase path, and means for varying the constant resistance attenuator to vary its loss, the equalizer thereby producing varying attenuation versus frequency slopes with constant over-all network terminal driving point resistance.

3,868,605
ADAPTABLE NOTCH FILTER

Lynn Allen Poole, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington

Filed Nov. 15, 1973, Ser. No. 416,150
Int. Cl. H03h 7/10; H03f 1/34
U.S. Cl. 333—76 **5 Claims**



1. An adaptable Biquad notch filter comprising at least two identical filter sections wherein each of the sections comprises:

first resistor network means (**10**) to which an input signal is applied;

inverter means (**1**) taking an input from said first resistor network;

second resistor network means (**12**) taking an input from said inverter means;

first amplifier means (**14**) taking an input from said second resistor network;

third resistor network means (**16**) taking an input from said first amplifier means;

second amplifier means (**18**) taking an input from said third resistor network;

third amplifier means (**20**) taking an input from said second amplifier means;

fourth resistor network means (**19** and **22**) comprising two sets of resistors, said first set of resistors connected as a feedback resistor around said third amplifier means, said second set of resistors connected between the output from said second amplifier means and the input to said third amplifier means;

fifth resistor network means (**24**) taking an input from said third amplifier means and applyings its output to the input of said first amplifier means;

sixth resistor network means connected to the output from said fifth resistor network and to the output from said first amplifier means;

summer means taking as inputs the input signal, the output from said second amplifier means, and the output from said first amplifier means, said summer means of the first filter section applying its output as the input signal to an inverter means of the next filter section, said summer means of the last filter section applying its output signal as the notch filter output;

each of said resistor networks comprising:

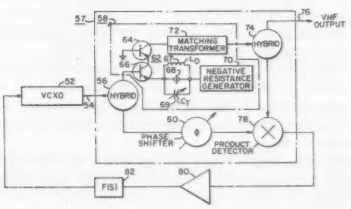
a plurality of selectable resistors,

a switch means for effectively selecting one of said plurality of resistors as a transmission path to filter the input signal of the network in a desired manner so that notch width, notch depth, and notch center frequency may be varied.

3,868,606
Q-MULTIPLIED CRYSTAL RESONATOR FOR IMPROVED HF AND VHF SOURCE STABILIZATION

Michael M. Driscoll, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 28, 1973, Ser. No. 401,780
Int. Cl. H03h 11/00; H03b 3/04
U.S. Cl. 333—80 T **6 Claims**



6. A Q-multiplied crystal resonator circuit for improved frequency stability having RF input and output means comprising:

a. a resonant circuit including a crystal unit,

b. amplifier means having high gain and isolation characteristics coupled to said crystal unit for amplifying an RF signal with high output power to crystal dissipation ratio, said amplifier means being adapted to receive an RF signal from said input means and said amplifier means being adapted to translate an RF signal to said output means; and

c. active negative resistance generator means coupled to said resonant circuit for providing positive feedback to

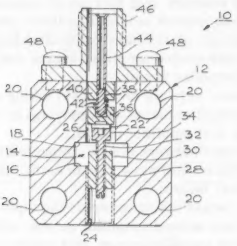
said crystal unit thereby increasing the Q of said resonant circuit for improved frequency selectivity and suppression of amplifier means noise.

3,868,607

DOUBLY ADJUSTABLE WAVEGUIDE PIN SWITCH

Garry N. Hulderman, Riverside, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 15, 1973, Ser. No. 406,437
Int. Cl. H01p *1/10*
U.S. Cl. 333—98 S **4 Claims**



1. A millimeter wave device comprising:

a. case means defining a waveguide passageway;

b. semiconductor positioning means disposed in said case means and adjustable relative thereto along an axis substantially normal to said passageway;

c. semiconductor contacting means in said case means and disposed substantially opposite said positioning means,

said contacting means having a fixed pin portion and a movable collar portion movable on said pin portion along said axis of said positioning means at a predetermined distance from the semiconductor positioning means in cooperation therewith;

the positioning means comprising outer and inner concentric post members providing respectively a first adjustment for varying the penetration of the outer post member into the waveguide passageway and a second adjustment for establishing a predetermined distance between one end of the outer post member and the movable collar portion of the contacting means;

d. semiconductor means disposed between said positioning means and said movable collar portion of said contacting means, and communicating with said waveguide passageway; and

e. bias circuit connector means coupled to said movable collar portion of said contacting means, said connector means and positioning means being adapted for coupling to a bias circuit for supplying bias energy to said semiconductor means,

said contacting means effecting with said case means a filter for blocking radio frequency energy from said bias circuit.

3,868,608

SURFACE WAVE FILTER

G. Norman Williams, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

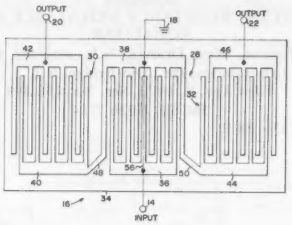
Filed Apr. 1, 1974, Ser. No. 457,060
Int. Cl. H03h *9/02, 9/26, 9/30*
U.S. Cl. 333—72 **7 Claims**

1. A surface wave filter comprising:

a substrate of piezoelectric material;

an input transducer deposited on said substrate and having an input comb of electrodes and a common comb of electrodes with mirror image symmetry about a center line; and

first and second output transducers deposited on said substrate on opposite sides of said input transducer and each having a common comb of electrodes and an output



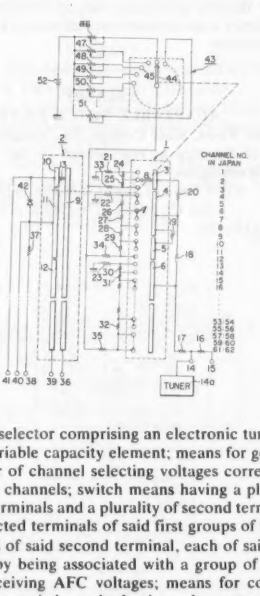
comb of electrodes with mirror image symmetry about a line displaced an integral number of wavelengths plus or minus one-fourth wavelength from said center line.

3,868,609

CHANNEL SELECTOR

Yukio Koyangi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 18, 1972, Ser. No. 298,493
Claims priority, application Japan, Oct. 19, 1971, 46-83186
Int. Cl. H03j *3/04, 3/06*
U.S. Cl. 334—11 **8 Claims**

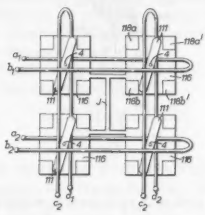


1. A channel selector comprising an electronic tuner utilizing a voltage-variable capacity element; means for generating a plural number of channel selecting voltages corresponding to the receiving channels; switch means having a plurality of groups of first terminals and a plurality of second terminals for connecting selected terminals of said first groups of terminals to selected ones of said second terminal, each of said second terminals thereby being associated with a group of said first terminal for receiving AFC voltages; means for connecting each of said generated channel selecting voltages to a separate terminal of said plurality of groups of first terminals; an AFC compensation resistance network having a plurality of taps and exhibiting different resistance values at each of said taps; means connecting each of said taps of said AFC compensation resistance network to separate ones of said second plurality of terminals of said switch means; means for connecting said AFC compensation resistance network to said tuner, and means connected to said AFC voltage receiving terminal and to said AFC compensation resistance network for superimposing said AFC voltages on said selected channel selection voltage.

3,868,610
SELECTIVE ELECTRICAL SWITCHING MEANS

Hassan Paddy Abdel Salam, London, England, assignor to Universal Telewriters (UK) Limited, London, England

Filed Nov. 29, 1973, Ser. No. 420,306
Claims priority, application Great Britain, Dec. 8, 1972, 56794/72; Mar. 30, 1973, 15524/73
Int. Cl. H01h *67/30*
U.S. Cl. 335—112 **9 Claims**



1. In a coordinate switching device comprising a plurality of selectively operable switching elements disposed in an array comprising rows and columns, each said switching element having an armature of magnetizable material, first and second spaced apart pole members of magnetizable material, a first gap defined between said armature and said first pole member and a second gap defined between said armature and said second pole member, means mounting said armature on the one hand and said first and second pole members on the other hand for relative movement therebetween whereby as the reluctance of said first gap increases with said relative movement that of said second gap diminishes and vice versa, and contact means operated by said relative movement, the improvement wherein there is provided:

a respective first electric circuit associated with each of said rows of switching elements;

means selectively energizing each said first electric circuit thereby to develop similarly directed magnetic fields in said first gap and in said second gap of each of the elements in the associated row;

a respective second electric circuit associated with each of said columns of switching elements; and

means selectively energizing each said second electric circuit thereby to develop oppositely directed magnetic fields in said first gap and in said second gap of each of the elements in the associated column;

whereby said selective energization of one of said first and one of said second circuits produces selective operation of one only of said switching elements.

3,868,611
MAGNETICALLY ACTUATED SEALED CONTACT

Wolfgang Mecklenburg, Asperg; Alfred Leicht, Stuttgart; Walter Hoffmann, Munklingen; Hans Dieter Pfeil, Mainz; Ingo Rudiger Isert, Bietigheim; Helmut Buttel, Leonberg-Etlingen; Richard Braunschweig, Stuttgart, and Philip John Smith, Kornwestheim, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

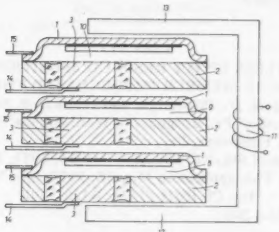
Filed Nov. 21, 1973, Ser. No. 417,984
Claims priority, application Germany, Dec. 1, 1972, 2258922
Int. Cl. H01h *47/00*
U.S. Cl. 335—196 **7 Claims**

3. A sealed contact capable of magnetic actuation comprising:

a base plate having a flat disc-shaped non-magnetically conductive outer part and a flat disc-shaped magnetically conductive inner part, said inner and outer parts being arranged eccentrically within the same geometric plane and sealed to each other by means of a glass ring;

a hood-shaped non-magnetically conductive cover having a flange-like projection for sealing to said outer part by means of an annular weld;

an armature-holding spring attached to the inner surface of said cover at a point opposite said outer part; and

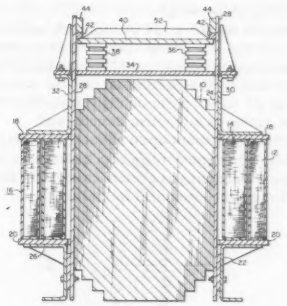


an armature attached to said spring opposite said inner part, said armature having a spherical configuration on one surface thereof for providing electrical contact with said inner part, whereby a plurality of said contacts are capable of being arranged in a stack such that the base plate of each contact in the stack is opposite the cover of the next lowest contact therewithin said stack.

3,868,612
POWER TRANSFORMER HAVING A SPRING-COMPRESSED WINDING STRUCTURE

Francis D. Kaiser, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1974, Ser. No. 448,867
Int. Cl. H01f *27/30*
U.S. Cl. 336—197 **1 Claim**



1. Electrical inductive apparatus comprising:

a magnetic core having at least one leg;

a winding structure having upper and lower ends and being disposed around said leg;

a first washer-shaped pressure plate which is positioned adjacent to the lower end of the winding structure;

a first end frame member positioned to push the first pressure plate against the winding structure;

a lock plate which is rigidly attached to the first end frame member and which extends above the upper end of the winding structure;

a structural brace coupled to said lock plate;

a second washer shaped pressure plate which is positioned adjacent to the upper end of the winding structure;

a second end frame member positioned to push the second pressure plate against the winding structure;

a lock plate guide member which is attached to the second end frame member for guiding the lock plate; and,

at least one ring spring disposed in compressed relationship between the structural brace and the lock plate guide member to force the pressure plates together;

said ring spring including a plurality of rings stacked in axial alignment with each other, with adjacent rings telescoping with respect to each other when the ring spring is compressed.

3,868,613

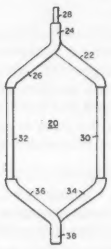
SOLVENTLESS EPOXY RESIN COMPOSITION AND AN ELECTRICAL MEMBER IMPREGNATED THEREWITH

Dow A. Rogers, Jr., Pittsburgh, and James D. B. Smith, Turtle Creek, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 189,382, Oct. 14, 1971, Pat. No. 3,759,866. This application May 18, 1973, Ser. No. 361,753

Int. Cl. H01f *27/32;* **B32b** *19/00*

U.S. Cl. 336—206 **14 Claims**



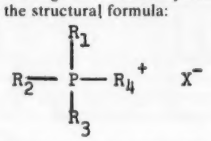
1. An insulated electrical member for use in high voltage equipment and a cured body of resinous insulation applied to the member, the high voltage capability insulation comprising the cured resinous reaction product of a composition consisting essentially of, by weight:

A. about 85 to 115 parts of a glycidyl ether epoxy resin selected from the group consisting of bisphenol A epoxy resins, novolac epoxy resins and mixtures thereof;

B. about 100 to 155 parts of an organic acid anhydride;

C. about 25 to 95 parts of diglycidyl ether of neopentyl glycol acting as a reactive diluent; and

D. an effective amount up to about 0.25 parts per 100 parts glycidyl ether epoxy resin of a quaternary organic phosphonium salt acting as a latent catalyst for the epoxy resin and having the structural formula:



where R_1, R_2, R_3 and R_4 are selected from the group consisting of aryl and alkyl radicals and X is selected from the group consisting of propionate, acetate, butryate, isobutyrate and dimethyl phosphate radicals.

3,868,614

IMPROVED CIRCUIT BREAKER TRIP MECHANISM

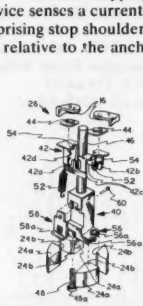
William P. Riendeau, Leonardtown, Md., assignor to Aiken Industries, Incorporated, New York, N.Y.

Division of Ser. No. 159,930, July 6, 1971, Pat. No. 3,771,087. This application Aug. 8, 1973, Ser. No. 386,588

Int. Cl. H01h *71/16*

U.S. Cl. 337—66 **6 Claims**

1. In a circuit breaking trip mechanism of the type having a plunger for resetting the mechanism after tripping, a current sensing device movable relative to said plunger, means anchored to the plunger for biasing said current sensing device relative to said plunger for tripping movement, and latching means arranged to arrest said tripping movement until said current sensing device senses a current tripping condition; the improvement comprising stop shoulder means on said plunger selectively located relative to the anchor place of the biasing



means to engage and seat said current sensing device during its tripping movement after escape of said current sensing device from said latching means, said stop shoulder means further being located on the plunger to maintain said trip spring under tension when the current sensing device is in the current tripped position to inhibit spring disassembly.

3,868,615

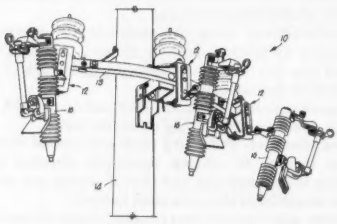
CURRENT SENSITIVE INTERRUPTING TERMINATOR ASSEMBLY

Harold Dennis Haubein, and Lloyd R. Beard, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Nov. 12, 1973, Ser. No. 414,637

Int. Cl. H01h *71/10*

U.S. Cl. 337—169 **36 Claims**



1. A current sensitive interrupting terminator assembly for joining ends of an overhead conductor and an underground cable having a conductor therein terminated by a male contact, said assembly comprising:

an elongated, relatively rigid support member of insulative material adapted to be disposed in an upright position;

current interrupting means including

an open-ended fuse tube of lesser length than said support member, a meltable fuse element in the tube, an upper terminal adapted to be connected to said end of the overhead conductor, means mounting the fuse tube for pivoting movement from a location with the fuse element in electrically connected relationship to the upper terminal, to a position out of electrical connection therewith, and means engaging the fuse tube and operated by the meltable element for shifting the fuse tube out of said location in response to melting of the element;

means mounting said current interrupting means on the upper portion of said support member in disposition with the fuse tube located to face downwardly when the support member is in said upright position thereof,

said support member being provided with an elongated, normally downwardly opening bore therein;

a bored flexible sleeve of insulative material telescoped into said bore, affixed to said support member and projecting downwardly from the lower end thereof is generally axial alignment with the longitudinal length of the support member;

a female contact within said sleeve and located to be engaged by the male contact on said conductor of the cable when the latter is inserted into said sleeve bore,

the inner surface of the sleeve defining said sleeve bore being configured to complementally engage the part of the cable received therein in watertight, frictional engagement therewith; and

means electrically connecting said female contact with the meltable fuse element.

3,868,616

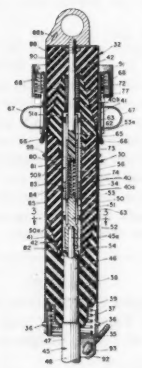
GROUNDED SURFACE DISTRIBUTION APPARATUS

Edward H. Yonkers, 905 Westerfield Dr., Wilmette, Ill. 60091

Division of Ser. No. 4,396, Jan. 20, 1970, , which is a continuation of Ser. No. 660,748, Aug. 15, 1967, abandoned. This application Apr. 12, 1971, Ser. No. 133,357

Int. Cl. H01h *85/02;* **H02g** *3/00;* **H01r** *13/46*

U.S. Cl. 337—201 **25 Claims**



1. An accessory for high voltage electric power conductor terminations of the type having first and second conductor terminations with respective end surfaces comprising

a module releasably positioned between the respective end surfaces of said first and second terminations,

insulated electrically conductive means in said module,

means for electrically connecting the respective conductor terminals in said termination to said conductive means whereby a current carrying circuit is completed between said terminals through said module,

means for forming water-tight uniform voltage grading seals between the ends of said module and the respective terminations when said current carrying circuit is completed,

and current interrupting means mounted within said module for interrupting the current carrying circuit between said terminals.

3,868,617

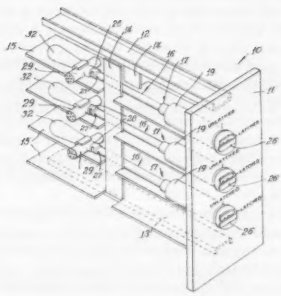
LATCH COUPLED FUSE AND EXHAUST CONTROL DEVICE

James W. Dragon, and Gerald Sakats, both of Arlington Heights, Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Oct. 10, 1972, Ser. No. 295,825

Int. Cl. H01h *39/00*

U.S. Cl. 337—203 **18 Claims**



1. A circuit interrupter comprising an expulsion fuse having a longitudinal axis and having an exhaust terminal at one end, an exhaust control device at said one end of said expulsion fuse, and a latch means for mechanically interconnecting said exhaust terminal and said exhaust control device, and for disconnecting said exhaust terminal and said exhaust control device in response to pivotal movement of said fuse about its longitudinal axis by an angle of less than 360°.

3,868,618

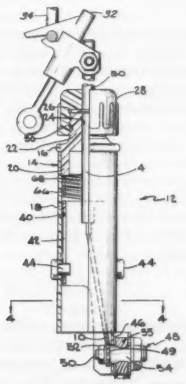
FUSE HOLDER HAVING INDICATOR MEANS

Frank Peter Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 18, 1974, Ser. No. 434,730

Int. Cl. H01h *85/30*

U.S. Cl. 337—206 **6 Claims**



1. A fuse holder adapted for use with a current limiting fuse, said fuse being cylindrical and having a radially extending collar at one end thereof, a conductive contact area centrally located with respect to said collar, and a flexible conductor extending from the other end thereof, said fuse holder comprising:

a generally cylindrical housing having a closed end and an open end, said closed end having a flat external surface and an axially extending opening extending therethrough and communicating with the interior of said housing,

a cap member removably mounted on said closed end, said cap member having a cap member conductor extending axially therethrough,

an indicator sleeve concentrically and slidably mounted on said housing, said indicator sleeve having a first end which is proximate to said closed end of said housing and having a second end which is remote from said closed end, said sleeve being movable between a retracted position, in which said second end thereof is adjacent to said open end of said housing, and an extended position, in which said second end is remote from said open end and portions of said sleeve extend substantially beyond said housing,

means for securing said flexible conductor to said sleeve and for securing an external conductor to said sleeve, and compressible resilient means interposed between said first end of said sleeve and said closed end of said housing whereby,

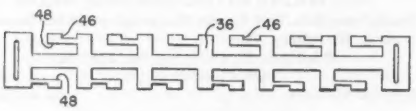
upon inserting said fuse through said opening and locating said collar on said surface, assembling said cap member to said housing, moving said sleeve to said retracted position, and securing said flexible conductor to said sleeve, said sleeve will be retained in said retracted position by said fuse, and if said fuse should fail, said sleeve will be moved to said extended position under the influence of said resilient means thereby to provide a visual indication of the failure of said fuse.

3,868,619

CORE CONSTRUCTION FOR CURRENT-LIMITING FUSE

Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1973, Ser. No. 407,336
Int. Cl. H01h *85/04*
U.S. Cl. 337—295 **7 Claims**



1. A fuse structure comprising a generally tubular, electrically insulating casing, terminal means disposed adjacent to each of the opposite ends of said casing, an axially-extending, electrically insulating support member disposed in said casing with the ends disposed adjacent to the respective terminal means, the support member comprising longitudinal portions and transverse intersupporting portions therefor, a fusible element disposed in a helical path on and around said longitudinal portions and connected between said terminal means, and the insulating support member comprising opening means at least a portion of which extends longitudinally of the member for a distance equal to at least one-half of a helical cycle of the fusible element.

3,868,620

LEVEL SENSOR AND METHOD OF MAKING THE SAME

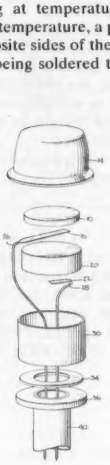
Lyle E. McBride, Jr., Norton; William W. Bowman, North Easton, both of Mass.; Hans A. Stoeckler, Woonsocket, R.I.; Harold A. Hanson, Pawtucket, R.I., and Joseph J. Gibola, Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,872
Int. Cl. H01c *7/00*
U.S. Cl. 338—28 **19 Claims**

1. A liquid level sensor adapted for connection to an electrical circuit comprising

a bulbous-shaped housing having one open end and having therein

an electrical isolator soldered on one side to an inside surface of the housing, a temperature sensor pill having a low electrical resistance mode and a high electrical resistance mode, the switch-over between the two modes occuring at temperatures above a predetermined anomaly temperature, a pair of leads soldered at one end to opposite sides of the sensor pill, one side of the sensor pill being soldered to the other side of the



electrical isolator away from the side which is adhered to the inside surface of the housing, sandwiching the end of one lead therebetween, and

cover means hermetically sealing the open end of the housing and having the other ends of the leads extending therethrough and adapted for connection to the circuit

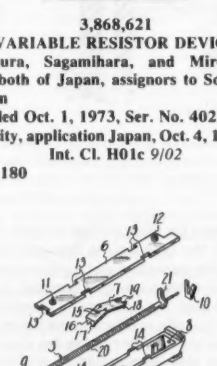
whereby when the level sensor is immersed in one ambient it is cooled thereby and operates in one resistance mode and when the level sensor is exposed to another ambient it self-heats to temperatures above the anomaly temperature and operates in the other resistance mode.

3,868,621

VARIABLE RESISTOR DEVICE

Nobuo Kitamura, Sagamihara, and Miroshi Fukagawa, Tokonama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 1, 1973, Ser. No. 402,008
Claims priority, application Japan, Oct. 4, 1972, 47-115216
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **3 Claims**



1. A variable resistor device, comprising:

a housing formed of walls including end walls, one of said walls being detachable and being provided with resistive

material on the inner surface thereof, said one wall further being provided with at least one electrical terminal connected to said resistive material;

a screw shaft longitudinally mounted in said housing and rotatably supported by said end walls, said screw shaft having threads and being made of conductive material;

a second electrical terminal disposed at one end of said screw shaft and in electrical contact therewith, said second electrical terminal extending externally of said housing; and

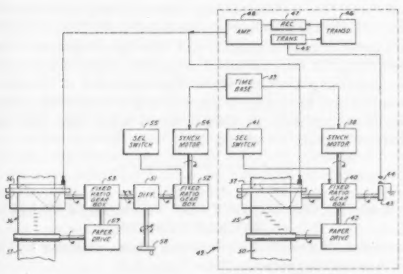
a movable contact element positioned on said screw shaft and bidirectionally advanced along said screw shaft in accordance with the rotation thereof, said contact element being formed of a resilient conductive plate bent between end portions thereof to thereby form a contact portion which is resiliently urged into physical contact with said resistive material, one end of said movable contact element being bent into engagement with said screw shaft at an inclination in accordance with the thread angle of said screw threads and being formed of a V-shaped cutout, and the other end of said movable contact element having a pair of guiding portions formed integrally therewith which extend outwardly along said screw shaft so as to not engage with the screw threads but to be supported by said screw shaft by abutment therebetween.

3,868,622

RANGE RATE COMPENSATION SYSTEM

Sydney T. Knott, Barnstable, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1960, Ser. No. 75,040
Int. Cl. G01s *9/68, 7/60*
U.S. Cl. 340—3 R **7 Claims**



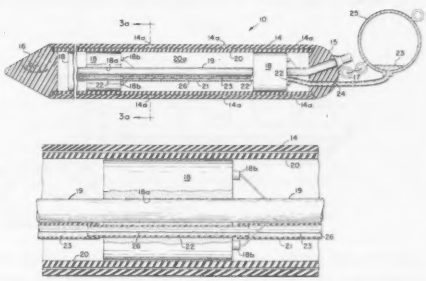
1. In a sonar system of the type wherein search pulses are periodically transmitted by a transducer and echo pulses produced by reflecting targets in the propagation path of said search pulses subsequently detected by said transducer, a first recorder having a moving strip of paper, means for registering each search pulse adjacent one reference edge of said moving paper and echo pulses derived therefrom variable horizontal distances away in accordance with the range to the reflected target producing these echo pulses, a second recorder having a moving strip of paper and means for simultaneously registering successive echo pulses from the same target the same distance away from a corresponding reference edge of said last-mentioned strip of paper whereby the range of said targets can be determined from an examination of said first recorder and changes in the appearance of the echo pulses from the same target can be observed on the second recorder.

3,868,623

TOWABLE SONAR ARRAY WITH DEPTH COMPENSATION

Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,198
Int. Cl. G01v *1/16*
U.S. Cl. 340—7 PC **8 Claims**



1. An essentially neutrally buoyant transducer of acoustic energy comprising:

means for compliantly enclosing a gas-filled space;

at least one transducer element carried in the compliantly enclosing means having a hollow interior in communication with said gas-filled space;

means disposed in the compliantly enclosing means for resiliently containing a fluid having a density greater than the surrounding medium, said fluid present in quantities sufficient to counteract the buoyancy provided by said gas-filled space; and

means disposed in the medium being connected to the compliantly enclosing means and coupled to the resiliently containing means for maintaining said fluid in said quantities as the compliantly enclosing means and the resiliently containing means are simultaneously compressed and expanded in response to ambient pressure changes, the gas in said gas-filled space is concurrently fed to and evacuated from said hollow interior in response to the compression and expansion of the compliantly enclosing means and the resiliently containing means thereby pressure compensating each said transducer element.

3,868,624

APPARATUS FOR MAPPING ACOUSTIC FIELDS

Harper John Whitehouse, and Tibor G. Horwath, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 29, 1972, Ser. No. 319,124
Int. Cl. H04b *13/00*
U.S. Cl. 340—8 R **2 Claims**

1. Apparatus useful for mapping acoustic pressure fields in the range of 10 Hz to 2 MHz, comprising:

a distributed electrostatic transducer, functioning as a strip transmission line, which includes:

a flat, substantially rectangular, metal plate, one surface of which is rough, the plate having a length generally in the range of 10 to 100 wavelengths of the acoustic frequency at which the mapping is to be done, and a width and thickness in the range of 0.01λ to 0.05λ;

a rectangular strip of dielectric foil disposed under surface tension on the rough surface of substantially the entire

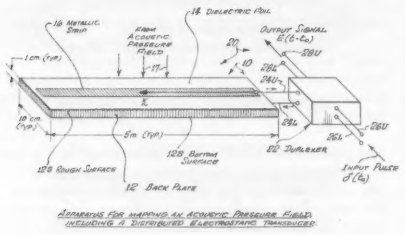
metal plate so that the foil touches only the most protruding parts of the surface; and

a long, narrow, rectangular, metallic strip disposed on and attached to the dielectric foil, the strip being exposed to, and therefore defining, an acoustic pressure field; and

a duplexer, electrically connected to the metallic strip and to the flat plate, connectable to a source of electrical input signals, and having output terminals at which an output electrical signal may be measured;

with the result that, when an electromagnetic delta function $\delta(t_o)$ is applied at the input to the duplexer, electromagnetic waves travel in both directions along the strip transmission line, the duplexer having the function of separating the signal reaching the output terminals of the duplexer from the applied signal $[E(t-t_o)]\ \delta(t_o)$ which is interrogating the line, the returning signal containing two groups of frequencies:

1. low frequency components w_a identical to those present in the acoustic pressure field, and
2. high-frequency components containing wave vectors k_a, also present in the acoustic pressure field, the two components being readily separable, because of the great differences in their frequencies, and hence any specific pressure field $P(k, w)$ may be reconstructed.

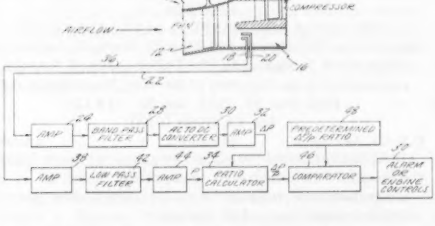


APPARATUS FOR MAPPING AN ACOUSTIC PRESSURE FIELD INCLUDING A DISTRIBUTED ELECTROSTATIC TRANSDUCER.

3,868,625
SURGE INDICATOR FOR TURBINE ENGINES

Jack D. Speigner, Lake Park, and Frank B. Thompson, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 316,941, Dec. 20, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,307
Int. Cl. G01m *15/00*
U.S. Cl. 340—27 SS **14 Claims**



1. An indicator for a turbine engine comprising

pressure sensing means positioned in a flow path of said engine and producing signals which are a function of the gas pressure oscillations therein,

a band pass filter connected to receive said signals and passing therethrough only the high frequency signal components characteristic of engine surge,

a low pass filter connected to receive said signals and passing therethrough only the low frequency signal components indicative of the steady-state pressure,

a ratio calculator receiving said high frequency signal components and said low frequency signal components and producing a ratio signal which is a function of the ratio of the amplitudes of the high frequency signal components to the low frequency signal components,

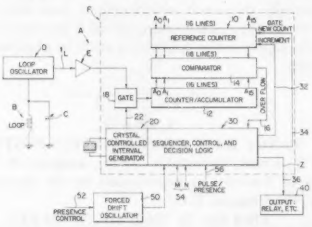
a reference signal, and

comparator means for comparing the ratio signal with said reference signal and producing an output signal when said ratio signal exceeds said reference signal.

3,868,626
DIGITAL LOOP DETECTOR SYSTEM

Dale P. Masher, Los Altos, Calif., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed July 9, 1973, Ser. No. 377,544
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 L **62 Claims**

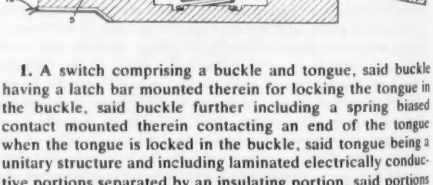


1. A digital detecting system for generating an output signal when an electrically conductive mass comes within the field of effect of a loop, said system comprising: means for creating a pulse train, the number of pulses in said train being controlled primarily by the presence of said mass in the field of effect of said loop; means for generating a first signal representative of the average of the number of pulses in said pulse train; means for generating a second signal representative of a reference count; means for comparing said first and second signals; and, means for creating an output signal when said first signal differs from said second signal.

3,868,627
LAMINATED TONGUE FOR VEHICLE SEAT BELT BUCKLE SYSTEM

Ronald C. Lawwill, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,653
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 E **3 Claims**



1. A switch comprising a buckle and tongue, said buckle having a latch bar mounted therein for locking the tongue in the buckle, said buckle further including a spring biased contact mounted therein contacting an end of the tongue when the tongue is locked in the buckle, said tongue being a unitary structure and including laminated electrically conductive portions separated by an insulating portion, said portions of the unitary tongue structure comprised of alternating laminations of electrically conductive and non-conductive mate-

rial through its thickness, and said contact contacting said electrically conductive portions when the tongue is locked in the buckle, with an electrical circuit completed when the tongue is locked in the buckle through the electrically conductive portions of the tongue and the contact in the buckle.

3,868,628

DEVICE FOR INDICATING DISCONNECTION OF AUTOMOBILE LAMPS

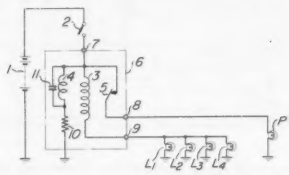
Yasuhiko Sakurai, Kariya, Japan, assignor to Nippondenso Co. Ltd., Aichi-kens, Japan

Continuation of Ser. No. 175,518, Aug. 27, 1971,. This application Nov. 21, 1973, Ser. No. 417,938

Claims priority, application Japan, Aug. 28, 1970, 45-86297[U]; Aug. 28, 1970, 45-86298[U]; Aug. 28, 1970, 45-86299[U]

Int. Cl. B60q *1/38*

U.S. Cl. 340—80 **2 Claims**



1. A system for indicating disconnection of automotive lamps comprising an electric source having a predetermined nominal voltage output, a plurality of more than two automotive lamps connected in parallel with each other, disconnection indicating means, a relay having a current winding connected between said electric source and said more than two automotive lamps, for generating a magnetomotive force; said relay having a voltage winding, connected in parallel with the combination of said current winding and said more than two automotive lamps for generating an opposite magnetomotive force to that of said current winding; said voltage winding being connected in series with a resistor and in parallel with a capacitor; said relay further having a relay contact, connected between the junction point of said two windings and said disconnection indicating means, for interrupting the electric current through said disconnection indicating means when the net magnetomotive force of said two windings becomes above a predetermined value; said current and voltage windings of said relay being designed so that the opposite magnetomotive force generated by said voltage winding is a predetermined amount less than the magnetomotive force generated by said current winding when all of said more than two automotive lamps are connected with the net magnetomotive force consisting of said magnetomotive force less said opposite magnetomotive force being sufficient to actuate said relay contact to interrupt current flow, said predetermined amount by which said opposite magnetomotive force is less than said magnetomotive force being determined by requiring the change in net magnetomotive force caused by current reduction through said current coil due to disconnection of one of said more than two automotive lamps to be greater than changes in net magnetomotive force due to a decrease in voltage output of said electric source of predetermined amount from its nominal value or to an increase in voltage output of said electric source a predetermined amount from its nominal value whereby changes in voltage output of said electric source within the predetermined limits which increase the net magnetomotive force are insufficient to increase said net magnetomotive force to a value which would actuate said relay contact if one of said more than two automotive lamps is disconnected and changes in voltage output of said electric source within the predetermined limits which decrease the net magnetomotive force are insufficient to decrease said net magnetomotive force to a value which would prevent actuation of said relay contact when all of said more than two automotive lamps are connected.

3,868,629

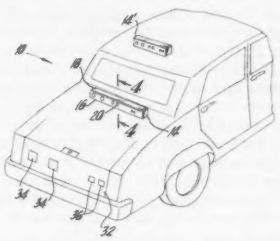
VISUAL COLLISION AVOIDANCE WARNING DEVICE

Harold A. Caine, 484 Kent Ct., Oceanside, N.Y. 11572

Filed Dec. 3, 1973, Ser. No. 420,952

Int. Cl. B60q *1/00*

U.S. Cl. 340—104 **18 Claims**



1. Apparatus for installation in a first vehicle for providing to the operator of a second vehicle spaced from said vehicle, a visual indication concerning the distance between the two vehicles, said apparatus comprising:

a. housing means positioned with respect to said first vehicle;

b. illumination means situated within said housing means; and

c. screen means impervious to light from said illumination means disposed on at least one side thereof, said screen means being provided with a plurality of pairs of windows, lying in a single plane the windows constituting each pair being substantially identical and separated from each other by a spacing which corresponds to the resolving power of the eye at a predetermined distance, wherein the illumination from the windows of each pair is substantially equal and sufficient to be seen at said predetermined distance, each pair being spaced from adjacent pairs by an amount greater than the spacing between the windows constituting that pair, and wherein the windows constituting a pair which are separated from each other by a greater spacing, has a greater size than the windows constituting a pair which are separated by a smaller spacing.

3,868,630

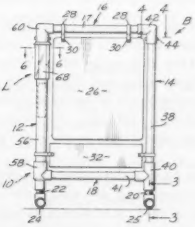
PORTABLE TRAFFIC BARRICADE

William V. Lesondak, 12741 Third St., Yucaipa, Calif. 92399

Filed Apr. 16, 1973, Ser. No. 351,473

Int. Cl. E01f *9/00*

U.S. Cl. 340—119 **6 Claims**



1. Skeletal structure means of generally tubular plastic construction particularly adaptable for use as a portable traf-

fice barricade having, in its normal service capacity, a generally flat upright part defining a frame of generally rectangular shape for the display of at least one informational panel and having, also, two legs; said skeletal structure means including, additionally, two elongate feet, each of said feet being threadedly engaged with the lower end of a separate one of said legs in such a way as to extend substantially perpendicularly outwardly, in opposite directions, from the axis of the leg, and each foot being rotatably adjustable between a first position normal to the plane of axial disposition of said flat upright part of said skeletal structure means, in which it serves as stable support means for the standing upright part, and a second position at right angles to said first position, to permit substantial flattening of the structure for convenient handling and storage thereof, the rotational adjustment of said foot between said first position and said second position being achieved by turning it in threaded engagement with said leg;

said frame for the display of at least one informational panel having a first jamb with built-in flasher light means, said flasher light means having a tubular lens forming a structural part of said first jamb, disposed in axial alignment with the remaining part of the jamb, and a light source laterally enclosed by the lens, and said tubular lens serving to direct light rays from said light source laterally outwardly through its wall in such manner as to render the light visible in a substantially complete circle thereabout.

3,868,631

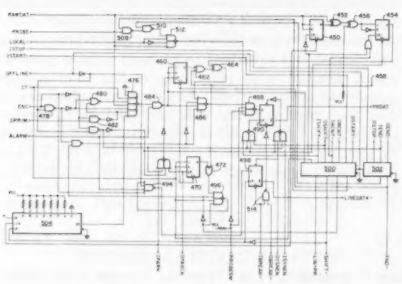
DIGITAL CRYPTOGRAPHIC SYSTEM AND METHOD

Barrie O. Morgan; Kenneth M. Branscome, both of Dallas; George E. Goode, Richardson, and John Q. Atchley, Dallas, all of Tex., assignors to Datotek, Inc., Dallas, Tex.

Division of Ser. No. 299,387, Oct. 20, 1972. This application Aug. 10, 1973, Ser. No. 387,362

Int. Cl. G06f *11/10*

U.S. Cl. 340—146.1 AG **3 Claims**



1. In a cryptographic system, a parity check system comprising:

means for transmitting enciphered digital data having a parity bit,

means for receiving said enciphered digital data from said transmitting means and for detecting said parity bit,

means for checking the parity of preselected bits of said enciphered digital data and for storing an indication of whether or not the checked parity matches said parity bit, means connected to said receiving means for deciphering said enciphered digital data to generate clear digital data, and

means responsive to said detecting and checking means for regenerating a parity bit for said clear digital data such that the parity of said clear digital data corresponds with the detected parity of said enciphered digital data, in order to prevent the generation of incorrect parity indications for the clear digital data due to deciphering of said data.

3,868,632

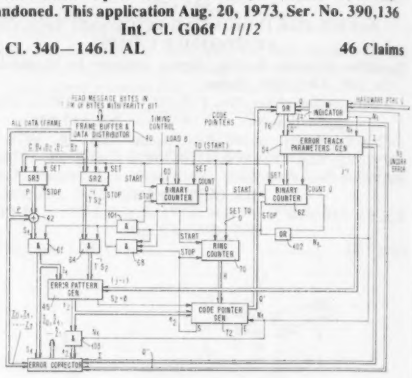
PLURAL CHANNEL ERROR CORRECTING APPARATUS AND METHODS

Se J. Hong, Poughkeepsie, N.Y., and Arvind M. Patel, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 306,975, Nov. 15, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 390,136

Int. Cl. G06f *11/12*

U.S. Cl. 340—146.1 AL **46 Claims**



1. An error correcting system for correcting up to two channels in error in a multiparallel channel data handling system comprising:

an encoding system including cyclic check bit generating means for generating an orthogonally symmetrical check bit for each of said parallel channels, said check bits being entered into said respective channels and being grouped to form a cross-channel check byte;

said encoding system further including parity bit generating means for generating parity bits for information bytes formed in a cross-channel direction, means for entering said parity bits into one of said parallel channels;

means for decoding said data by means of said parity bits and information bytes formed in the cross-channel direction to detect errors; and

means for correcting errors in all the bytes extending along any one or more channels including cyclic means generating a cyclic syndrome vector simultaneously to a parity syndrome vector based on the errors detected in the decoding utilizing only said cross-track bytes.

3,868,633

BLOCK CODED COMMUNICATION SYSTEM

Carlos Nuese, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1973, Ser. No. 425,580

Int. Cl. H04l *1/14*; G08c *25/02*

U.S. Cl. 340—146.1 BA **7 Claims**

1. Communication apparatus comprising:

a sending station;

a remote receiving station;

said stations being connected to each other by a noisy forward communication channel and by a noiseless feedback communication channel;

said sending station comprising means for accepting input data symbols and for converting K of said data symbols into G groups,

means for inserting a separator symbol after each of said groups,

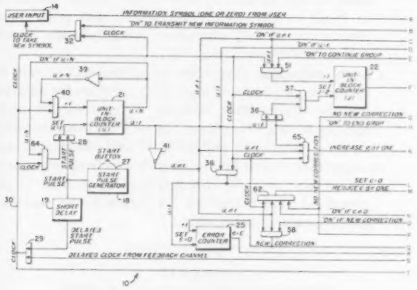
means for transmitting said G groups of information symbols, said separator symbols, correction symbols and reversal symbols to form a block comprising N total symbols to said receiving station by means of said forward channel;

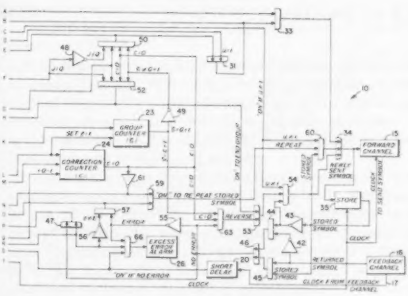
said receiving station comprising means for returning each received symbol, as received, to said sending station by means of said feedback channel;

said sending station further including means for comparing each returned symbol of said block with the original corresponding symbol transmitted and for producing an error indication each time a difference is detected, up to a maximum of E errors,

means responsive to each error indication to provide Q of said correction symbols,

means for interrupting the transmission of said G groups and separator symbols after each error is detected and for transmitting said Q correction symbols to said receiving station during each interruption thereof and immediately following each error,





means further responsive to the total number of errors, e, occurring in each block for providing $(E - e)$ Q of said reversal symbols if $e < E$,

means for interrupting the transmission of said G groups, separator symbols, and correction symbols and for transmitting said reversal symbols to said receiving station by means of said forward channel, to complete the N symbols of each block and wherein $N = K + G + EQ$;

said receiving station further including means responsive to said received blocks to determine if Q successive symbols have the same value thereby indicating the occurrence of an error during transmission,

means for replacing each $(Q + 1)$ symbols in which the earliest symbol has one value and the successively received Q symbols have the opposite value with a single value equal to the Q identically-valued symbols, and

means for removing said separator symbols from each block thereafter to provide error-free information symbols.

3,868,634

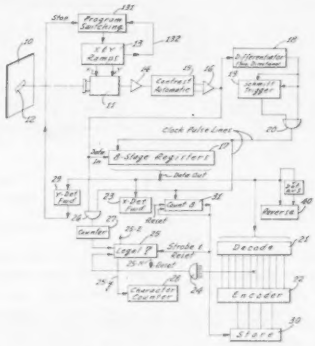
READING OF CONTRASTING DATA BY MEANS OF CONTINUOUSLY ATTEMPTING TO DECODE READ SIGNALS

Volker Dolch, Neu Isenburg, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed Nov. 3, 1972, Ser. No. 303,507

Int. Cl. G06k *7/10*

U.S. Cl. 340—146.3 D **15 Claims**



7. In an apparatus for detecting and reading information characters in printed form and having contrasting bars extending parallel to each other and along a data field and having means for scanning a particular area by a line scan raster, wherein the lines of the raster field extend in a particular direction on the area, and including means for developing a scanning information signal representing the contrast along the scanning line in any instant, further having means for changing the direction, so that the lines of sequential raster fields extend in different directions; and signal means connected to receive the signal and processing the signal to obtain a train of data bits; the improvement comprising:

a clock generator included in the signal means and producing a clock pulse for each contrast edge encountered, and another clock pulse a predetermined period thereafter equivalent to the width of a data bar, said clock pulses defining the bit rate in said train.

first means connected for processing the data bits of the train and searching for particular characteristics in the bit pattern of sequential groups of bits pertaining to one scanning line of any of the raster fields, each of the groups having predetermined length;

second means connected to the first means for decoding the groups of bits in accordance with a particular code conversion rule, and on basis of a plurality of particular patterns; and

third means connected to the second means for assembling the converted codes of plural sequential successful decodings as a group of characters in a data field.

3,868,635

FEATURE ENHANCEMENT CHARACTER RECOGNITION SYSTEM

Mahendra B. Shah, Annandale, Va.; Donald W. Russell, Potomac, Md., and Harold L. Bowman, Vienna, Va., assignors to Optical Recognition Systems, Reston, Va.

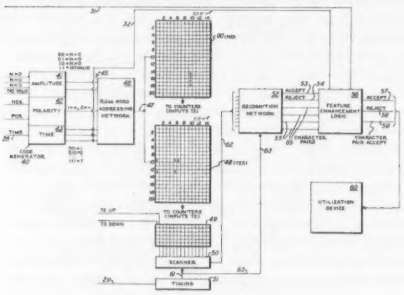
Filed Dec. 15, 1972, Ser. No. 315,766

Int. Cl. G06k *9/06*

U.S. Cl. 340—146.3 MA **7 Claims**

1. A character recognition system for recognizing the characters of a character font, each character being comprised of a unique configuration of predetermined features comprising; means for exposing each of said characters to a transducer,

means for generating at least a signal representative of each character, means responsive to said at least a signal for sequentially generating a plurality of feature signals for each character corresponding to the features of that character, a memory means comprised of a matrix of bistable elements for storing information bits, the rows of which correspond to features and the columns of which correspond to the said characters, said memory having information bits stored in each feature row at the character columns corresponding to



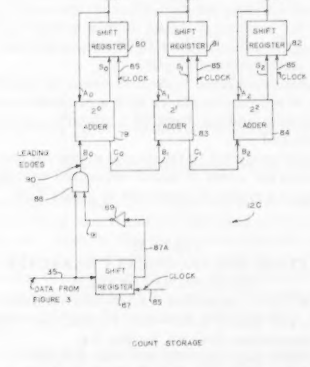
the characters which include that feature, the matrix positions at which said bits are stored in said memory means being alterable, a counting means associated with each character, and means for reading out the bits in each feature row when the corresponding feature signal is generated to activate the counting means associated with the character columns in which said bits are stored, means responsive to the outputs of said counting means for generating a recognition signal corresponding to one of said characters.

3,868,636

OPTICAL CHARACTER READER HAVING FEATURE RECOGNITION CAPABILITY

Arthur Schlang, Woodbury, N.Y., assignor to Isotec Incorporated, Plainview, N.Y.

Filed June 18, 1973, Ser. No. 371,163
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 J **15 Claims**



1. An optical character reader for optically reading characters of a font of two dimensional plane characters based on an ideal regular plane matrix of two mutually perpendicular sets of linear strokes comprising:

a plurality of electro-optical sensor means arranged consecutively in an array, which is disposed to scan said characters one at a time while said characters are moved relative to said array in a direction of movement perpendicular to said array in the plane of said matrix and parallel to one of said sets of strokes and, to produce electrical signals corresponding to configurations of said characters,

sensor processing means in circuit with said sensor means and arranged to amplify said signals, quantize said amplified signals, and correlate said quantized signals to reduce effects of optical noise,

a feature generator means connected to said sensor processing means and arranged to apply several predetermined tests to determine the absence or presence of certain specified features:

said feature generator means comprising:

a first circuit means for determining the height of said characters;

a logic circuit means for counting the number of times each of said electro-optical sensor means detects one or more of the strokes parallel to said array of said characters as said characters longitudinally traverse said sensor means; and

a count sequence circuit means connected to said first circuit means and said logic circuit means for determining the consecutive number of said electro-optical sensing means which have counted the same number of strokes, parallel to said array of said characters; and

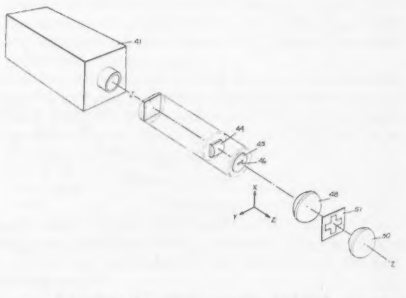
an algorithm circuit in circuit with said feature generator means for applying predetermined criteria to data communicated therefrom, to ascertain the identity of said characters being read.

3,868,637

DOCUMENT RETRIEVAL SYSTEM

Michael S. Schiller, 4585 Fieldston Rd., Riverdale, N.Y. 10005

Division of Ser. No. 185,066, Sept. 30, 1971,. This application Sept. 19, 1973, Ser. No. 398,855
Int. Cl. G06k *9/13*
U.S. Cl. 340—146.3 F **8 Claims**



1. In an automatic document retrieval system for reading a film at a predetermined plane, the interrogating light beam generating apparatus comprising:

light source means to provide a beam of spatially coherent light circular in cross-section and having a first cross-sectional area,

first and second cylindrical lenses optically downstream from said light source means to convert said circular light beam into a collimated eliptical light beam having a second cross-sectional area less than said first cross-sectional area,

a plate having an opening of a desired reading window configuration at the back focal plane of the optically downstream one of said cylindrical lenses,

first and second spherical lenses downstream from said plate to process and transmit the diffracted light beam from said opening,

said opening being at the front focal plane of said first spherical lens, the back focal plane of said first spherical

lens being substantially coincident with the front focal plane of said second spherical lens,

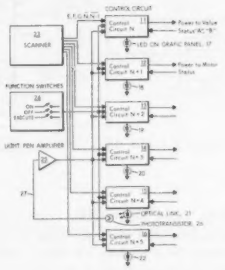
the back focal point of said second lens being coincident with the predetermined plane of the film at which the information to be read is located,

the sole image created at said predetermined plane being an image of the light transmitted through said opening in said plate.

3,868,638
SIGNAL LIGHT-PHOTO SENSITIVE PROBE CONTROL SYSTEM

Irvin D. Johnson, Englewood, Colo., assignor to Marathon Oil Company, Findley, Ohio

Filed July 12, 1973, Ser. No. 378,724
Int. Cl. H04q 9/00
U.S. Cl. 340—147 R **10 Claims**



1. In a remote control system for operating various elements located some distance away from a control panel, the improvement comprising in combination

a. a control circuit means for controlling each of said elements,

b. a light source corresponding to each of said elements to be controlled, said light source being switched on by said control means when said element is in a first status and switched off when said element is in a second status,

c. a light sensitive probe adapted for being placed in proximity with any of said light sources,

d. an electrical system which successively sweeps each of said light sources in synchronization with a distinctive period of time measured from the beginning of each sweep, whereby the time as measured from the start of each sweep, at which said light probe receives a signal from one of said light sources is indicative of which of said light sources is then being energized.

3,868,639
REMOTE CONTROL RECEIVER RESPONSIVE TO SOUND

Hisao Okada, Yokohama, and Tadashi Sato, Tokyo, both of Japan, assignors to Sony Corporation, Shinogawa-ku, Tokyo, both of, Japan

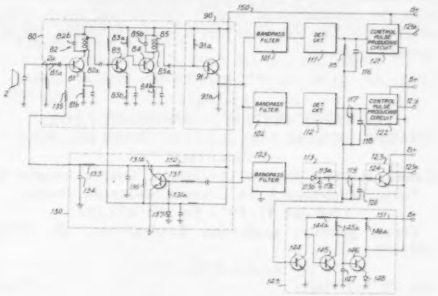
Filed Oct. 17, 1972, Ser. No. 298,383
Claims priority, application Japan, Oct. 18, 1971, 46-82292
Int. Cl. H04q 1/18, 1/45
U.S. Cl. 340—148 **7 Claims**

1. A circuit for discriminating between sound signals, which are generated by a transmitter and which have at least one predetermined frequency, and noise signals, said circuit comprising:

A. electro-acoustic transducer means for converting the transmitted sound and the noise signals into electrical signals;

B. variable gain means for amplifying the electrical signals;

C. control means responsive to the amplified electrical signals for producing a controlling signal in response to the amplified signals, said control means being connected to said amplifying means to control the gain of the variable gain amplifying means, said control means comprising a time constant circuit having a shorter time constant and a slow discharge time constant;



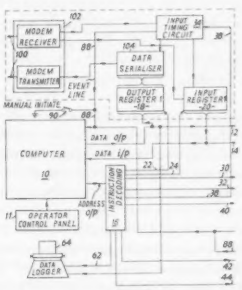
D. means for converting the amplified electrical signals into corresponding direct current pulse signals whose durations are representative of the length of time that the amplitude of the amplified electrical signals is above a first predetermined voltage level;

E. means responsive to the integrated direct current pulse signals for producing output control signals representative of each integrated direct current pulse signal whose amplitude exceeds a second predetermined voltage level.

3,868,640
INTERROGATION OF REMOTE STATIONS VIA AUTOMATIC DIALLER

Alexander Joseph Binnie, Luton; Kenneth Bowdell, Shefford, and Philip James Clark, Luton, all of England, assignors to George Kent Limited, Luton, Bedfordshire, England

Filed May 8, 1972, Ser. No. 251,203
Claims priority, application Great Britain, May 13, 1971, 14638/71
Int. Cl. H04g 9/00
U.S. Cl. 340—151 **38 Claims**



1. Apparatus for the interrogation of a plurality of remote stations, comprising a digital computer, automatic calling means connected to the computer and responsive to an instruction signal from the computer to generate a dialing signal for application to switching circuits, thereby to establish telephonic contact with a predetermined one of the remote stations via an associated line from the switching circuits; output means connected to the computer and responsive to an instruction signal from the computer to generate and transmit to the predetermined remote station via the switching circuits a coded interrogation signal arranged to promote the transmis-

sion of an information-carrying response signal from the remote station, the output means including means for selectively coding the interrogation signal according to the computer instruction with a code representative of a predetermined one of a plurality of sources of information available at the predetermined remote station, whereby a response signal including information from the said predetermined source is transmitted from the predetermined remote station, and input means connected to the computer and operative to receive the response signal.

3,868,641

CONTROL SYSTEM PARTICULARLY FOR INTERLOCKING INSTALLATIONS FOR RAILWAY OPERATION

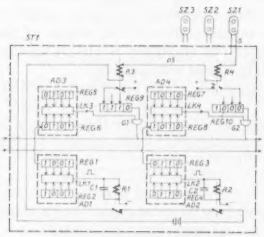
Gunnar Johannes Hagelin, Skarholmen, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed Jan. 11, 1974, Ser. No. 432,681

Claims priority, application Sweden, Jan. 29, 1973, 7301177

Int. Cl. H04q *9/00*

U.S. Cl. 340—163 **1 Claim**



1. A control system particularly for interlocking installations for railway operation including controlled means, condition indicating means and a central control unit comprising a computer, means for receiving condition information from said condition indicating means in said control unit, and means for sending orders to said controlled means from said control unit, an instruction memory in the computer containing two instruction sequencies causing identical result in treating each of the controlled and indicating means, and a data memory having two separate memory fields for the two respective instruction sequencies to be carried out, a definite logical relation existing between at least one of the following parameters:

a. the addresses of the respective memory fields,

b. the bit significance in the respective memory words,

c. the bit representation in the respective memory words,

said controlled means comprising receiver means for receiving control orders each computed according to one of said instruction sequencies and operating upon agreement between said two control orders, and information sending means in said indicating means for sending two separate condition information data having a logical relation to each other defined by the logical relation of the content in the memory fields.

3,868,642

HIERRARCHIAL ASSOCIATIVE MEMORY SYSTEM

Harold Sachs, Faistenhaar, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

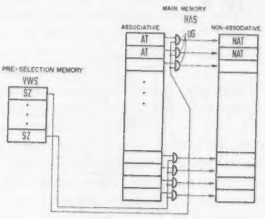
Filed Aug. 21, 1972, Ser. No. 282,382

Claims priority, application Germany, Aug. 25, 1971, 2142634

Int. Cl. G06f *13/00*; **G11c** *15/00*, *17/00*

U.S. Cl. 340—172.5 **4 Claims**

1. Associative memory apparatus in which a non-associative portion stores data words which are respectively accessed when an offered address coincides with the corresponding data address stored in an associative portion, comprising: a main memory including storage cells each having a non-associative portion and an associative portion, said non-associative portions of said cells storing data words and said associative portions of said cells storing the low value address of digits of said data words; an associative pre-selection memory connected to said main memory and including storage cells storing the higher-value address digits of said data words, said preselection memory and said associative portions of said main memory receiving an input address and including means providing coincidence signals when the high and low-value address digits of said data words correspond to said input address, said non-associative portions of said main memory responsive to and accessed by said coincidence signals, a



plurality of AND gates, each gate connected between the associative and non-associative portions of a storage cell of said main memory and having an input connected to said associative portion, an output connected to said non-associative portion, and an input connected to a storage cell of said pre-selection memory, the AND gates associated with storage cells of said non-associative portions which have the same higher-value address digits stored in said pre-selection memory being combined in a group and having a common input connected to the corresponding storage cell of said pre-selection memory and operated to access the non-associative portions connected thereto in response to a coincidence signal from said pre-selection memory and a coincidence signal from one of the associative portions connected thereto.

3,868,643

CONVEYOR MEMORY SYSTEM

Kenneth W. Bullivant, Turnersville, N.J., assignor to K-Tron Corporation, Glassboro, N.J.

Filed Mar. 26, 1973, Ser. No. 345,039

Int. Cl. G06f *15/20*; **B65g** *43/00*; **G01g** *19/00*

U.S. Cl. 340—172.5 **17 Claims**

1. Apparatus for compensating for the effects of the characteristics of a conveyor means at a predetermined measuring point, as the conveyor means traverses said measuring point, comprising:

means for detecting a predetermined point on said conveyor means;

means for generating a marker pulse in response to the detection of said point, said marker pulse indicating a complete cycle of movement of said conveyor means;

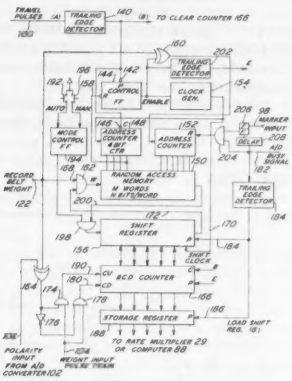
means for generating travel pulses in response to movement of said conveyor means, said travel pulses indicating the movement of segments of said conveyor means past said measuring point;

means for generating a first signal representing said effects when the conveyor means is not loaded;

means for generating a second signal representing said effects of the conveyor means when it is loaded;

means for storing said first signal representing said effects of said conveyor means in an address location determined by said marker and travel pulses;

means for reading out of said storing means said stored signal in response to said marker and travel pulses; and



means for compensating said second signal by said stored signal

---

3,868,644

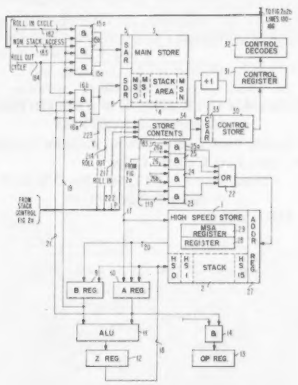
STACK MECHANISM FOR A DATA PROCESSOR

Robert A. Healey, Endicott, and Everett M. Shimp, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1973, Ser. No. 373,847

Int. Cl. G06f *13/06*

U.S. Cl. 340—172.5 **7 Claims**



1. In a system having means including a stack and a slower speed store for directly executing algorithmic type problem programs of the type

in which means transfers data entries into and removes entries from the stack for processing in a last-in-first-out order and

in which means roll overflow entries out to the slower speed store when the stack is full and roll overflow entries into the stack when the stack is empty,

the combination with the stack and slower speed store of means including pointer registers for permitting the removal of each entry in the stack from the stack for processing after a copy of said entry has been rolled out to the slower speed store but not rolled back to the stack.

3,868,645

APPARATUS FOR AUTOMATICALLY FINDING MICRODOCUMENTS ON A FILM

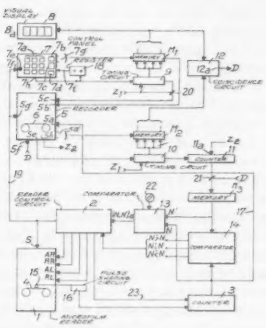
Jean Delplanque, Vayres-sur-Essone, and Jacques Foursy, Villejuif, both of France

Filed July 10, 1972, Ser. No. 270,258

Claims priority, application France, Sept. 13, 1971, 7132965

Int. Cl. G06f *7/22*; **G03b** *23/12*

U.S. Cl. 340—172.5 **23 Claims**



1. Apparatus for locating frames of a film, the apparatus comprising:

a film reader having means for driving a film;

sensing means for sensing the position of said frames of said film as said film is driven;

a magnetic recording reader operable independent of said film reader and adapted to receive a magnetic recording medium; said medium having recorded thereon a plurality of words corresponding to respective ones of said frames to be located and position data associated with each said word defining the position of said frames identified by said words, said position data also being recorded on said medium;

searching means operably connected to said magnetic recording reader for searching said medium in said magnetic recording reader to find a word corresponding to a frame to be located;

comparison means operably connected to said searching means and said sensing means for comparing position data read from said medium which corresponds to said word found by said searching means with the frame position as sensed by said sensing means and for providing a signal representative of the conditions compared; and

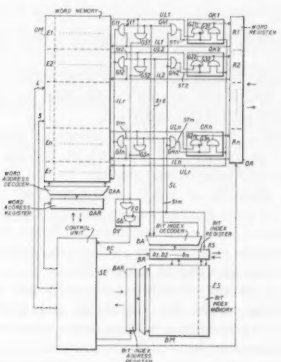
means for controlling the film driving means in said film reader, said controlling means being connected to said film reader and said comparison means and acting to terminate film displacement in said film reader upon the occurence of a signal representing a favorable comparison when said sensing means senses a position corresponding to the position data associated with said word found on said medium of said magnetic recording reader.

3,868,646
MEMORY DEVICE WITH STANDBY MEMORY ELEMENTS

Ruben Gustav Bergman, Alvsjo, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed May 4, 1973, Ser. No. 357,118
Claims priority, application Sweden, June 9, 1972, 7605/72
Int. Cl. G06f *11/00;* **G11c** *7/00, 13/00*
U.S. Cl. 340—172.5 **5 Claims**

1. In combination with a computer which has a memory having memory elements for storing words wherein each word is a coded combination of bits in bit positional index order and each word is stored in an addressable word group of the memory elements, each memory element storing a particular positional bit of a word, a word register for receiving a word from an addressed word group of the memory or transferring a word to an addressed word group of the memory, a word address register for receiving the address of the word group, a source of word addresses, a transfer means for transferring word addresses from the source of word addresses to the word address register, and a control unit for controlling the transfer means, and the control unit including means for transmitting control signals to the memory for indicating the direction of transfer of a word between the word register and the word group indicated by the contents of the word address register, standby memory apparatus comprising a plurality of input channel means and a plurality of output channel means, means for connecting each of said input and output channel means between a bit position of the word register and a corresponding bit position element of an addressed word group, at least one standby memory element for at least some of the word groups of the memory, a plurality of controllable writing gate means each having a control input, an information input connected to one of said input channel means and an information output connected to said standby memory element of an addressed word group, each of said controllable writing gate means connecting its information input to its information output upon receipt of a control signal at its control input, a plurality of reversing switch means, each of said reversing

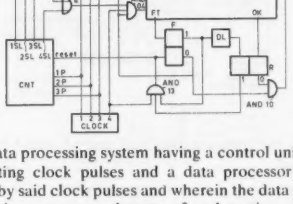


switch means being interposed in one of said output channels, each of said reversing switch means having a first information bit input connected to receive a particular positional bit from an addressed word group, a second information bit input for receiving the bit stored in the standby memory element of the addressed word group, an information bit output connected to the associated bit position of the word register, and a reversing control input means for receiving a control signal, each of said reversing switch means including means operative in the absence of such control signal at said reversing control input means for connecting said first information bit input to said information bit output and in the presence of such control signal for connecting said second information bit input to said information bit output, a bit index storage means for transmitting a control signal to the associated control input of the controllable writing gate means and the associated control input means of the reversing switch means in accordance with the bit position stored therein, and said control unit including means for transferring to said bit index storage means a representation of the desired bit position.

3,868,647
ELIMINATION OF TRANSIENT ERRORS IN A DATA PROCESSING SYSTEM BY CLOCK CONTROL

Frederik Zandveld, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 16, 1973, Ser. No. 360,833
Claims priority, application Netherlands, May 27, 1972, 7207216
Int. Cl. G06f *1/04*
U.S. Cl. 340—172.5 **6 Claims**

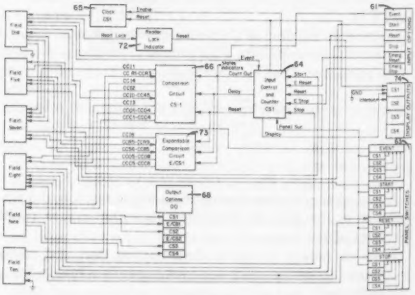


1. In a data processing system having a control unit, a clock for generating clock pulses and a data processor which is controlled by said clock pulses and wherein the data processor also comprises an error detector for detecting processing errors, said system also including means to reset the control unit to a prior operational position by control of an error signal generated by the error detector and means internal to the control unit to restart the data processor by an appropriate restart signal, the improvement comprising means responsive to the error signal for generating an intermediate signal in addition to the restart signal, and means responsive to said intermediate signal and responsive to the clock for generating clock pulses having a repetition time which exceeds that of the clock pulses provided prior to the appearance of the error signal, whereby the processor may be operated at the faster clock rate so that transient processing errors may be avoided.

3,868,648
PROGRAMMABLE PROCESS AND PRODUCTION CONTROL SYSTEMS

Herman Levin, Fort Collins, Colo., assignor to Industrial Dynamics, Inc., Fort Collins, Colo.

Filed July 5, 1973, Ser. No. 376,827
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **13 Claims**



1. A programmable process and production control center for operating a system which system yields process and production status signals, said control center being subject to the receipt of command signals from source means external to said control center, with said control center comprising:

comparison means for developing an output signal in response to a first combination of input signals and to governing signals;

means for producing said governing signals to govern the operation of said comparison means in response to a second combination of input signals;

and selectively-fixed totally-and-simultaneously-accessed passive self-decoding read-only memory means responsive to a plurality of incoming signals for defining and determining the development of said first and second combinations of input signals,

said incoming signals being a combination of those present of said status signals, of said command signals, of signals representing a time interval, of signals representing a number of events and of signals, including said governing signals and said output signal, representing said governing operation,

said memory means including a medium in which is defined an array of signal path locations that define and represent a program and also including a reader for said medium to accept and translate array-defined ones of said incoming signals as input signals of said first combination to which said comparison means responds and to accept and translate array-defined ones of said incoming signals as inputs signals of said second combination to which said producing means responds with said second combination of input signals including signals representing the magnitude of at least one of said time interval and said number of events, the program defined and represented by said array determining which of said incoming signals are translated as input signals and also determining at least in part which of said incoming signals are included in each of said first and second combinations of input signals,

and said read-only-memory means exhibiting a self-contained capability of responding directly to all possible combinations of said incoming signals in definition and determination of said development.

3,868,649

MICROPROGRAM CONTROL SYSTEM

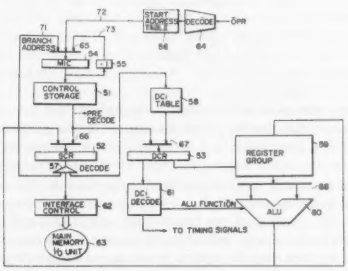
Kiyosumi Sato, Kawasaki; Takashi Aoki, Yokohama, and Yasuyoshi Asagi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed June 26, 1973, Ser. No. 373,793

Claims priority, application Japan, June 28, 1972, 47-64831; July 20, 1972, 47-72748

Int. Cl. G06f *9/06*

U.S. Cl. 340—172.5 **9 Claims**



1. A microprogram control system comprising control storage means for storing micro instructions and including means for dividing the micro instructions into a first set of micro instructions for controlling a data path and a second set of micro instructions for memory access control; sequence control means for reading out from said storage means in accordance with a microprogram the first and second sets of instructions independently of each other; and first and second registers for receiving respectively the first and second sets of instructions read out from said control storage means.

3,868,650

READOUT DEVICE FOR FABRIC PATTERNS FOR THE FORMATION OF CORRESPONDING ELECTRIC PULSES, ON HOSIERY MACHINES

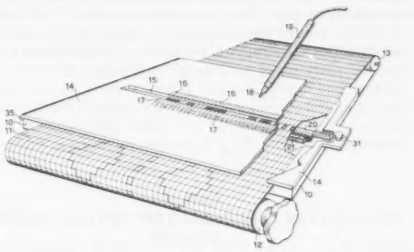
Mario Piro, Genova, Italy, assignor to Nuova San Giorgio S.p.A., Genova-Sestri, Italy

Filed Jan. 11, 1974, Ser. No. 432,584

Claims priority, application Italy, Jan. 11, 1973, 19165/73

Int. Cl. H01r *13/50*

U.S. Cl. 340—173 R **5 Claims**



1. A readout device for a fabric pattern and formation of the corresponding pulses, comprising a guideway which slidably supports the pattern sheet in which a row of meshes is represented by a row of reference symbols, a plate which can be superposed to said guideway, two pluralities of contact elements arranged on parallel rows perpendicular to said guideways and between which a window is opened which permits the readout of said pattern, a plurality of light sources, each arranged in the vicinity of a pair of confronting elements in the two rows: means of manual actuation of each of said contact elements, the one and the other element of a couple of confronting elements controlling a bistable circuit to actuate or deactivate, respectively, the emission of an energizing signal for the corresponding light source, a storage member for the delivered signals being further provided.

3,868,651

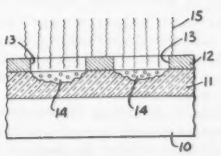
METHOD AND APPARATUS FOR STORING AND READING DATA IN A MEMORY HAVING CATALYTIC MATERIAL TO INITIATE AMORPHOUS TO CRYSTALLINE CHANGE IN MEMORY STRUCTURE

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 63,404, Aug. 13, 1970, abandoned. This application July 9, 1971, Ser. No. 161,219

Int. Cl. G11c *11/34*

U.S. Cl. 340—173 LS **56 Claims**



1. The method of recording and retrieving information comprising the steps of: providing a layer of substantially disordered and generally amorphous memory material which has one structural condition which is substantially disordered and generally amorphous and having one detectable charac-

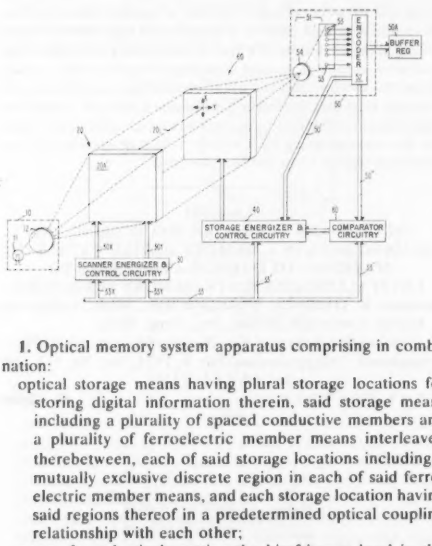
teristic, which is capable of having discrete portions thereof physically changed to another structural condition having another detectable characteristic, which has internal biasing forces toward said other structural condition, and which has internal inhibitions against the action of said biasing forces; providing said layer with a catalytic material which is catalytically capable of relatively increasing said biasing forces and decreasing said inhibitions against the action of said biasing forces of the memory material; selectively, at selected desired discrete portions of the layer of memory material in accordance with a desired pattern of useful information, activating the catalytic material at said selected desired discrete portions of the layer and physically changing said layer at said selected desired discrete portions from said one detectable structural condition which is substantially disordered and generally amorphous to said other detectable structural condition to record the desired pattern of useful information in said layer; and detecting the structural condition of said selected desired discrete portions of said layer of memory material as to whether said desired discrete portions are in said one detectable structural condition which is substantially disordered and generally amorphous or in said other detectable structural condition to retrieve the information recorded in said layer.

3,868,652

MULTI-LAYER FERROELECTRIC OPTICAL MEMORY SYSTEM

Lawrence Cooper, Endwell; Lawrence B. Ii, and David C. T. Shang, both of, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1973, Ser. No. 371,227
Int. Cl. G11c *11/42*
U.S. Cl. 340—173 LM **8 Claims**



1. Optical memory system apparatus comprising in combination:

optical storage means having plural storage locations for storing digital information therein, said storage means including a plurality of spaced conductive members and a plurality of ferroelectric member means interleaved therebetween, each of said storage locations including a mutually exclusive discrete region in each of said ferroelectric member means, and each storage location having said regions thereof in a predetermined optical coupling relationship with each other;

means for selectively setting the birefringent level in the storage regions of each ferroelectric member means, the birefringent levels set for the regions of each particular storage location providing a spectral characteristic indicative of digital information to be stored in the particular storage location;

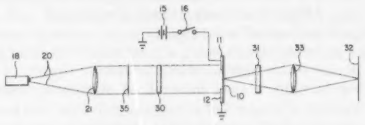
and detecting means for optically detecting the spectral characteristic of the regions associated with each storage location to determine the digital information stored therein.

3,868,653

ERASABLE OPTICAL MEMORY

Donald C. Winter, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 1, 1973, Ser. No. 402,660
Int. Cl. G11b
U.S. Cl. 340—173 LS **13 Claims**



1. An erasable optical memory comprising:

a. a polycrystalline material having electro-optical properties and a birefringence inducible by an electric field and by photons, and said material being transparent to light within a predetermined wavelength region;

b. means for generating and projecting an intense light beam onto said material; and

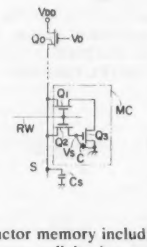
c. means interposed into the path of said light beam for modulating the intensity of said light beam in accordance with the data to be stored, whereby a substantially permanent birefringence is induced in said material representative of the data.

3,868,654

MEMORY CELL WITH HIGH THRESHOLD WRITING TRANSISTOR

Kiyoo Itoh, Kodaira; Katsuhiro Shimohigashi, Kokubunji, and Keisuke Hashizume, Hachioji, all of Japan, assignors to Hitachi, Ltd., Chryoda-ku, Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,742
Claims priority, application Japan, Oct. 20, 1972, 47-104452; Sept. 17, 1973, 48-103848
Int. Cl. G11c *11/24, 7/00, 11/40*
U.S. Cl. 340—173 CA **4 Claims**



1. In a semiconductor memory including:

at least one memory cell having a reading transistor, a writing transistor, and an information storage transistor, each transistor having an input electrode, an output electrode, and a control electrode, the output electrodes of said reading transistor and writing transistor being respectively connected to the output electrode and control electrode of said information storage transistor;

a sense-digit line connected to the input electrodes of each of said reading and writing transistors;

a select-line connected to the control electrodes of each of said reading and writing transistors; and

a terminal for coupling a source of reference potential to the input electrode of said information storage transistor; and

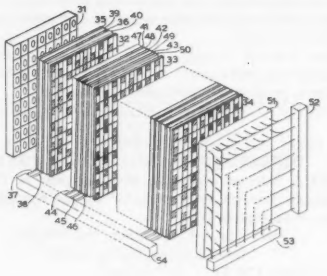
the improvement wherein the threshold voltage of said writing transistor, at which threshold voltage a current conductive path is established between the input and output electrodes of said writing transistor, is fixedly

larger than the threshold voltage of said reading and information storage transistors.

3,868,655
THREE DIMENSIONAL OPTICAL ASSOCIATIVE MEMORY

Franco Filippazzi, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Nov. 1, 1973, Ser. No. 411,950
Claims priority, application Italy, Nov. 29, 1972, 32200/72
Int. Cl. G11c *15/00, 13/02*
U.S. Cl. 340—173 AM **8 Claims**



1. An associative optical memory system for storing in memory locations binary information arranged in words composed of a plurality of bits and for retrieving the locations containing words matching at least in part with an interrogating word composed of a plurality of bits, comprising:

a plurality of optical recording supports, each for recording one bit of each of said words, each support comprising a plurality of bit recording regions, each region comprising a first bit area and a second bit area, each bit being recorded in said first area in either opaque or transparent form according to its value and being recorded in said second bit area in opposite form with respect to said first area, said recording supports being arranged in a stack with bit recording regions of each word in alignment;

radiation means for supplying at least a radiation beam for illuminating one of said bit areas of all the bit recording regions of a word;

a plurality of electrooptical beam shifting devices for transversely shifting said beam in response to shift control signals, each said beam shifting device being interposed between two subsequent recording supports and between said radiation means and a first of said recording supports;

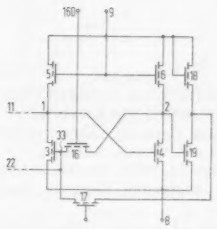
shift control signal generating means coupled to said shifting device for generating signals according to an interrogating word and for shifting said beam in alignment with a predetermined one of said first or second bit area of each bit recording region of the same word, depending on the value of each bit of the interrogating word; and

detecting means for detecting the beam emerging from said stack, when said beam is shifted to cross transparent areas in all the bit recording regions of said word.

3,868,656
REGENERATING CIRCUIT FOR BINARY SIGNALS IN THE FORM OF A KEYED FLIP-FLOP

Karl-Ulrich Stein, and Karl Goser, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 19, 1973, Ser. No. 426,036
Claims priority, application Germany, Dec. 19, 1972, 2262171
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 DR **7 Claims**

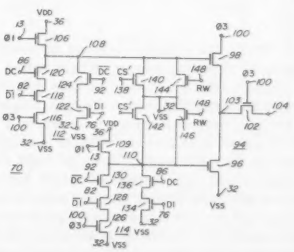


1. In a regenerating circuit for binary signals, in the form of a keyed flip-flop having one labile and two stable points, and with at least two inverting amplifier stages each including a switching transistor and a load transistor, in particular for stored signals and for the read-out of integrated single transistor storage elements which form a storage field in which the storage elements of the storage field are connected by way of a digit line to the regenerating circuit, the improvement therein comprising means for adjusting the inverting amplifier stages into the region of the labile point of the regenerating circuit, including a feedback circuit which comprises an odd number of inverter stages.

3,868,657
PERIPHERAL CIRCUITRY FOR DYNAMIC MOS RAMS

Charles Robert Hoffman, Tempe, Ariz., and Donald H. Kube, San Jose, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 284,183, Aug. 28, 1972, Pat. No. 3,796,893. This application Nov. 19, 1973, Ser. No. 417,151
Int. Cl. G11c *7/00, 11/40*
U.S. Cl. 340—173 R **8 Claims**



1. In a monolithic dynamic random access memory connected to first, second and third clock signals, a read-write signal, a data input signal, first and second power supplies and a chip select signal, and generating therein a data control signal and a data control complement signal, a write circuit for producing voltage levels representative of binary information provided by the data input signal on an output node, the write circuit including a push-pull driver circuit having a pull-up

field-effect transistor and a pull-down field-effect transistor, the improvement comprising:

a first discharge circuit connected to the gate of the pull-up field-effect transistor for producing a logical exclusive OR function of the data control signal and the data input signal;

a second discharge circuit connected to the gate of the pull-down field-effect transistor for producing a logical exclusive NOR function of the data control signal and the data input signal, and;

a data input inverter connected to the first and second discharge circuits for providing a data input complement signal thereto.

3,868,658

DEVICE FOR OPTICAL SUPERHETERODYNE INFORMATION READING

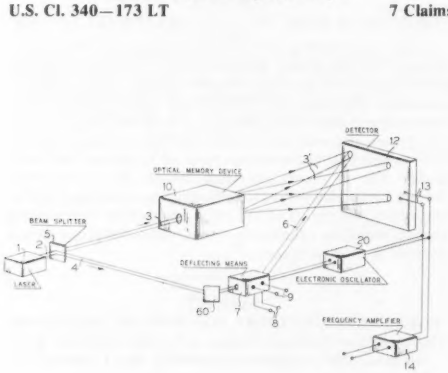
Horst Kiemle, Munich, Germany, assignor to Siemens Aktiengesellshaft, Berlin and Munich, Germany

Filed Sept. 20, 1972, Ser. No. 290,501

Claims priority, application Germany, Sept. 27, 1971, 2148173

Int. Cl. G11c *13.02*; **G02b** *27/00*

U.S. Cl. 340—173 LT **7 Claims**



1. In a device for optically reading information having a light source for directing a beam of light onto a portion of an optical memory which memory imposes information on the beam, a beam splitter disposed in the path of light between the source and the optical memory to separate a partial beam from the beam of light prior to striking the optical memory, means for guiding the partial beam of light through a frequency shifter and onto a detector which has a heterodyne reception of the partial beam and the beam having the information imposed thereon to transform light beams into electrical signals which are received by an intermediate frequency amplifier, the improvement comprising the frequency shifter being an acousto-optical light deflector which causes a direction-dependent frequency shifting of the partial beam which causes the electrical signal of the detector to be a variable intermediate frequency signal and an electronic oscillator providing a variable frequency output which is mixed with the variable intermediate frequency signal of the detector prior to the signal being received by the intermediate frequency amplifier, said oscillator being synchronized with the acousto-optical light deflector so that the signal received by the amplifier is a constant frequency signal.

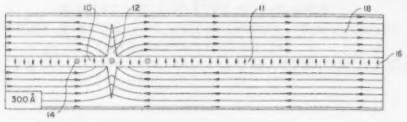
3,868,659

SERIAL ACCESS MEMORY USING THIN MAGNETIC FILMS

Leonard J. Schwee, Colesville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1973, Ser. No. 349,871

Int. Cl. G11c *11/14*, *11/42*

U.S. Cl. 340—174 TF **6 Claims**

1. A magnetic propagation arrangement comprising:

a stationary domain wall containing Bloch lines, cross-ties, and Neel walls wherein digital information is stored in said Neel walls;

means external to said domain wall for creating a field pattern on said domain wall whereby said digital information is propagated along said domain wall.

3,868,660

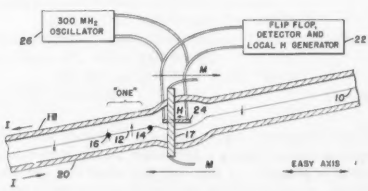
DETECTOR FOR CROSS-TIE MEMORY

Leonard J. Schwee, Colesville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1973, Ser. No. 349,897

Int. Cl. G11c *11/14*, *21/00*

U.S. Cl. 340—174 TF **5 Claims**



1. Apparatus for detecting magnetic digital information comprising:

a stationary magnetic domain wall containing Bloch lines, cross ties and Neel wall segments propagating therein;

probe means above said domain wall; and

means for introducing a localized field at said probe, whereby said domain wall undergoes wall reversal motion to be sensed by a change of magnetization by said probe.

3,868,661

MAGNETIC BUBBLE PASSIVE REPLICATOR

Peter Istvan Bonyhard, Edison; Yu-Ssu Chen, New Providence, and James Lanson Smith, Bedminster, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

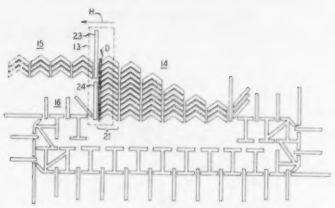
Filed Oct. 15, 1973, Ser. No. 406,639

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **8 Claims**

1. Magnetic apparatus comprising a layer of material in which single wall domains can be moved, a multistage pattern of elements coupled to said layer operative responsive to a magnetic field reorienting in the plane of said layer to move domains from stage to stage along a path, said pattern defining in a reference stage a linear array of attracting poles for enlarging said domain laterally with respect to said path, said pattern also including an additional element arrangement between said reference stage and a next subsequent stage to

produce first and second relatively strong attracting poles spaced apart laterally with respect to said path in response to said field, said additional element arrangement being of geom-



etries and being disposed with respect to said elements of said reference stage in a manner to generate intermediate repelling poles for cutting a domain moved from said reference stage to a next subsequent stage.

3,868,662

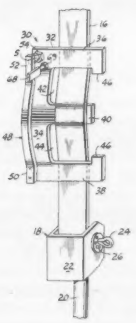
MOBILE HOME ANCHOR STRAND TENSION INDICATOR

Levi Russell, Jr., P. O. Box 461, Ballinger, Tex. 76821

Filed Mar. 25, 1974, Ser. No. 454,636

Int. Cl. G08b *23/00*

U.S. Cl. 340—213 R **6 Claims**



1. A tension sensing means for a flexible linearly adjustable anchor strand connecting an object to be anchored to the surface of the earth, comprising:

an elongated plate-like body having longitudinally spaced eyelets for threadedly receiving longitudinally an intermediate portion of said anchor strand,

said body having a transverse intermediate portion laterally off-set with respect to the plane defined by its respective end portions;

an indicator arm connected at one end portion with one end portion of said body and projecting at its opposite free end portion toward the other end portion of said body in overlying spaced relation with respect to the adjacent surface of said body;

normally closed switch means connected with said other end portion of said body,

said switch means being maintained open by contact with the free end portion of said arm;

warning signal means; and,

wiring connecting a source of electrical energy with said warning signal means through said switch means,

whereby displacement of said intermediate off-set body portion toward or away from the plane defined by the body end portions closes said switch means.

3,868,663

SMOKE DETECTING APPARATUS WITH MULTIPLE DETECTORS CONNECTED TO COINCIDENCE CIRCUIT

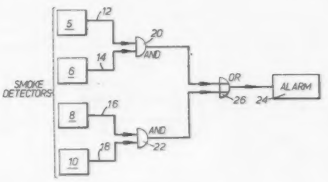
Brian Ray, Burnham, England, assignor to Wilkinson Sword Limited, High Wycombe, Buckinghamshire, England

Filed July 18, 1973, Ser. No. 380,148

Claims priority, application Great Britain, July 27, 1972, 35073/72

Int. Cl. G08b *17/10*

U.S. Cl. 340—237 S **6 Claims**



1. A smoke detecting system, comprising

a plurality of smoke detectors of the ionisation chamber type having respective outputs at which are produced electrical warning signals in the presence of smoke,

coincidence means having the same number of inputs as the number of said detectors, the said inputs being respectively connected to the outputs of the detectors, the coincidence means having an output at which is produced an output signal only when the plurality of its inputs simultaneously receive said warning signals, and

output means connected to the output of the coincidence means to produce an alarm indication in response to the said output signal.

3,868,664

LIQUID LEVEL DETECTING CIRCUITS

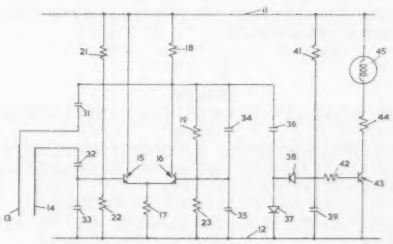
William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company, Birmingham, England

Filed June 28, 1973, Ser. No. 374,385

Claims priority, application Great Britain, July 1, 1972, 30918/72

Int. Cl. G08b *21/00*

U.S. Cl. 340—244 E **1 Claim**



1. A liquid level detecting circuit for giving an indication when the level of liquid in either of two containers falls below a predetermined minimum, comprising a first pair of electrodes in one of said containers, a second pair of electrodes in the other of said containers, an amplifier incorporating a regenerative feedback path and a degenerative feedback path, the amplifier oscillating when the degree of regeneration exceeds the degree of degeneration, one of said feedback paths including the first pair of electrodes and the second pair of electrodes connected in series, whereby oscillation of the amplifier is controlled in accordance with the liquid level in both containers, and means for detecting oscillation of the

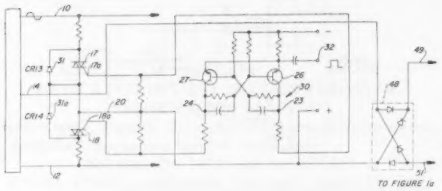
amplifier, whereby the liquid level in both reservoirs is detected.

3,868,665

GROUND FAULT CURRENT DETECTOR

Edward M. Treglown, Martinsville, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 8, 1974, Ser. No. 440,833
Int. Cl. G08b *21/00*
U.S. Cl. 340—255 **8 Claims**



1. A detector for sensing ground currents above a predetermined magnitude in either of a pair of isolated power lines and for limiting said ground current, said detector comprising,

means providing a variable impedance path to ground for said ground currents, said variable impedance means providing a low impedance path at low values of ground current and increasing with increasing magnitude of ground current to a maximum at values of ground current slightly above said predetermined magnitude,

alarm means responsive to values of ground current in said variable impedance path above said predetermined magnitude for providing an alarm indicating excessive ground current,

switch means between each of said power lines and said variable impedance path, and

bistable means synchronized to the frequency of said power lines for providing signals to trigger said switch means alternately into conduction on alternate cycles of the power line frequency,

whereby said power lines are connected alternately on alternate cycles of the power line frequency to said variable impedance means to cause ground currents from either power line above said predetermined magnitude to be detected and limited.

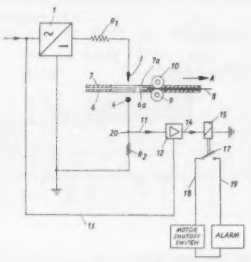
3,868,666

METHOD AND ARRANGEMENT FOR HANDLING SHEET GOODS

Karl Hartwig, Unterhaching, and Gunther Maurischat, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 29, 1973, Ser. No. 392,808
Claims priority, application Germany, Aug. 31, 1972, 2242948
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **10 Claims**

1. In an arrangement for handling sheet goods, in combination, a corona discharge electrode having a pointed end; an elongated collector electrode spaced from said corona discharge electrode to form therewith an air gap; means for establishing a flow of ionic current across said air gap from said corona discharge electrode to said elongated collector electrode; transporting means for transporting sheet goods along a predetermined path passing through said air gap in direction transverse to the direction of elongation of said elongated collector electrode and so oriented that sheet goods travelling along said predetermined path and through said air gap do not physically contact said electrodes; and monitoring means operative for determining whether or not an article of



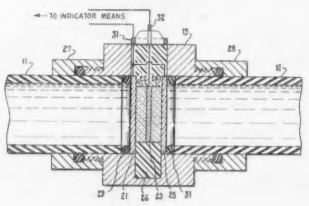
sheet goods is located in said air gap by monitoring the magnitude of said ionic current.

3,868,667

INTRUDER DETECTION SYSTEM EMBODYING A BIMORPH TRANSDUCER

Romans Skujins, Jr., Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1972, Ser. No. 241,646
Int. Cl. G08b *13/20*; **H01h** *35/34*
U.S. Cl. 340—272 **6 Claims**



1. A system for detecting penetration of a restricted area by an intruder comprising:

first and second substantially identical fluid-filled elongated tubular chambers adapted for ground burial, said elongated chambers adapted to generate representative internal pressures in response to external pressures of the variety produced by movement of intruders in the vicinity of said elongated chambers when buried:

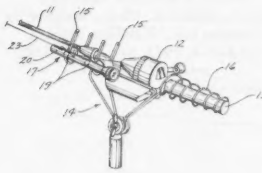
piezoelectric transducer means having first and second pressure sensitive inputs and a single electrical signal output, said piezoelectric transducer means being a planar dual crystal element bimorph structure wherein said first and second pressure sensitive inputs incorporate substantially identical planar crystal elements adapted for like flexure action, said bimorph structure adapted to produce an output signal potential when one crystal expands and the other contracts in response to an instantaneous pressure differential at said first and second pressure sensitive inputs; said first and second tubular chambers mechanically and hydraulically connected to said first and second pressure sensitive inputs such that the full surface area of one side of each respective planar crystal element is subject to said representative internal pressures within its respective tubular chamber;

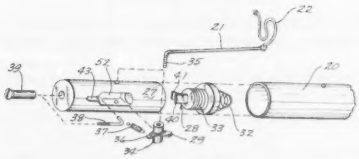
an indicator means electrically connected to said electrical signal output of said piezoelectric transducer means and adapted to produce an indication in response to said instantaneous pressure differential.

3,868,668
SIGNAL LIGHT FOR FISHING

Luther A. Woodbury, 1340 Garden Ave., Waterloo, Iowa 50701

Filed Aug. 6, 1973, Ser. No. 386,091
Int. Cl. A01k 93/00
U.S. Cl. 340—279 7 Claims





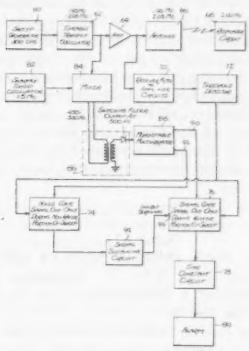
1. A signal light for a rod comprising: a housing for said signal light adapted to be secured with respect to a rod, a switch assembly, a cell and a bulb within said housing, said switch assembly having a rotary contact and a fixed contact, said contacts, said cell and said bulb being connected in a series circuit, said switch assembly having an actuator arm with one end attached to said rotary contact, spring biasing means for urging said rotary contact in an open position where it is not in engagement with said fixed contact and to position said arm in an outwardly slanting direction with respect to rod to which said signal light is attached, an eye through which a line can slip attached to the other end of said actuator arm, and said switch assembly operated to close said rotary and fixed contacts in response to a line through said eye being drawn taut along the rod to which said signal light is attached, said fixed contact comprising two leaf springs in a side to side relationship, one of said leaf springs being significantly shorter than the other leaf spring whereby the force required to move the rotary contact past the two leaf springs is greater in one rotary direction that in the other rotary direction.

3,868,669
REDUCTION OF FALSE ALARMS IN ELECTRONIC THEFT DETECTION SYSTEMS

Arthur J. Minasy, Woodbury, N.Y., assignor to Knogo Corporation, Westbury, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,019
Int. Cl. G08b 13/18
U.S. Cl. 340—280 11 Claims

1. A method for reducing the occurrence of false alarms in an electronic theft detection system of the type wherein an interrogation signal is varied in frequency and wherein predetermined changes in the electromagnetic field in the vicinity of a checkpoint are produced by the passage therethrough of protected articles carrying special electronic circuits whenever said interrogation signal passes through a given frequency range, and wherein an alarm indication is produced in response to said predetermined changes, said method comprising the steps of monitoring the interrogation signal frequency

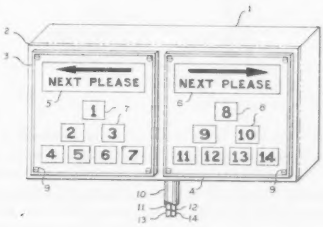


and preventing alarm indications when said interrogation signal frequency is outside said given range.

3,868,670
CUSTOMER SERVICE DISPLAY

Joseph O'Nory, 6121 Woodman Ave., Van Nuys, Calif. 91401, and Richard A. Reister, Yucca Valley, Calif., assignors to said O'Nory, by said Reister

Continuation-in-part of Ser. No. 337,762, March 2, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,560
Int. Cl. G08b 5/36
U.S. Cl. 340—286 5 Claims



1. A customer service display apparatus for use with a series of customer service stations, comprising, in combination:

a. a public display panel including a series of station indicating means for respectively indicating, when operating, the availability of each of the customer service stations for service to the awaiting public, said public display panel being placed in convenient view of the awaiting public;

b. an operation personnel displaay panel including a series of on-duty indicating means respectively indicating, when operated, whether or not each of said customer service stations has a clerk on duty, said operation personnel display panel being placed in convenient view of operation personnel only;

c. customer sensing switch means at each of said customer service stations connected to said public display panel for operating a corresponding station indicating means in response to a customer leaving a customer service station to thereby indicate on said public display panel the particular customer service station that is available to serve the next customer, the customer sensing switch means ren-

dering inoperative the corresponding station indicating means in response to a customer arriving at the customer service station to thereby indicate that said station is no longer available for service to a next customer while the customer is still present at the station; and,

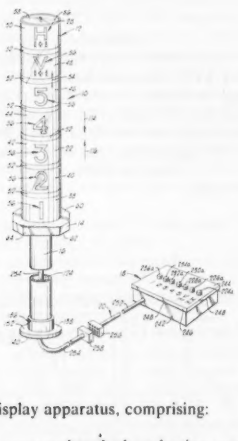
d. clerk operated switch means at each customer service station connected to said public display panel and to said operation personnel display panel for overriding the customer sensing switch means at the respective customer sensing station whereby operation of said clerk operated switch means renders the correspondingg station indicating means inoperative and simultaneously renders the corresponding on-duty indicating means inoperative to thereby advise operation personnel that the clerk at the particular customer service station has left or is not available for service.

3,868,671

BASKETBALL FOUL INDICIA DISPLAY APPARATUS

Hugh F. Maguire, 2211 N.W. 41, Oklahoma City, Okla. 73112, and William J. Miller, 1824 N.W. 56 Ter., Oklahoma City, Okla. 73118

Filed June 7, 1973, Ser. No. 367,798
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **11 Claims**



1. An indicia display apparatus, comprising:

a base;

support means connected to the base having portions forming a plurality of spaced compartments;

illumination means disposed in each of the spaced compartments, each illumination means providing light in an illuminated on position thereof;

control means connected to each of the illumination means having a portion selectively positioning each of the illumination means in the illuminated on position in one position thereof; and

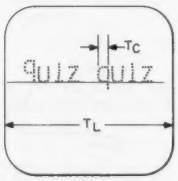
a housing constructed of a translucent material, having an upper end, a lower end and a plurality of spaced, opaque indicia formed thereon, the housing having an opening formed through a portion intersecting the lower end thereof forming a receiving opening, the lower end of the housing engaging the base, the housing being movable in a direction generally toward the base disposing the support means within a portion of the housing opening and in a direction generally away from the base removing the support from within the housing opening; and the predetermined indicia disposed adjacent predetermined compartments in an assembled position of the support means and the housing on the base, the illumination means illuminating the translucent portions of the housing disposed adjacent thereto accenting the opaque indicia in an illuminated on position of the illumination means.

3,868,672

CATHODE RAY TUBE CONTROL APPARATUS FOR DISPLAYING UPPER AND LOWER CASE CHARACTERS USING A SINGLE MATRIX

Robert B. Johnson, Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,039
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **18 Claims**



1. A cathode ray tube display system including a cathode ray tube, keyboard entry and storage means coupled to said tube, said keyboard entry and storage means including means for generating predetermined binary coded signals designating which character included in a set of characters is to be displayed along a horizontal line starting from a normal line position, said tube having major and minor vertical deflection generation means operative to generate major and minor positioning waveforms respectively for conditioning major and minor driver circuits for driving major and minor vertical coils in a vertical direction, said minor vertical deflection driver circuit means being operative to generate a high frequency pulse waveform for producing a predetermined number of character writing strokes for each of the characters to be written along said line, each of said strokes having a height corresponding to a number of spaces, said system further including improved positioning apparatus, coupled to said vertical deflection driver circuit means, said positioning apparatus comprising:

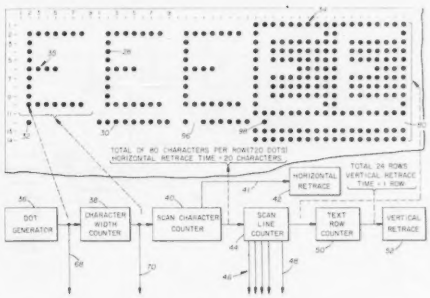
decoder circuit means coupled to said keyboard entry and storage means, said decoding circuit means including logic circuit means for generating a control signal in response to any one of a predetermined number of characters comprising a special group of characters within said set which have a similar characteristic; and,

amplifier circuit means including input means and output means, said input means being coupled to said logic circuit means and to said major vertical generation circuit means, and said output means being coupled to said vertical deflection driver circuit means, said amplifier circuit means being responsive to the joint application of said control signal and said positioning waveform to said input means to condition said amplifier circuit output means to apply an output signal to said deflection driver circuit means which produces an incremental vertical shift in said one of said predetermined number of characters from said normal line position.

3,868,673
DISPLAY APPARATUS INCLUDING CHARACTER ENHANCEMENT

Theodore J. Mau, Jr., and John L. Peterson, both of Chicago, Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Aug. 14, 1973, Ser. No. 388,286
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 AD **14 Claims**



1. An apparatus for enhancing the presentation of selected characters displayed upon the screen of a cathode-ray tube comprising:

readout means providing a plurality of coded signal outputs, at least one of said outputs providing a multilevel character signal determining the character to be displayed upon the cathode-ray tube screen;

means for selectively controlling the cathode-ray tube beam in accordance with said character signal so as to generate a dot matrix forming the encoded character;

said readout means providing an underline enhancement signal corresponding to an enhancement characteristic of the character being displayed;

a selectively actuated inverter receiving said character signal from said readout means for controlling the intensity of the cathode-ray tube electron beam;

a scan line counter providing an output signal related to the writing of a selected scan line on the display screen;

first control means actuated by said scan line signal in the presence of said underline enhancement signal for generating a first control signal; and

said readout means providing a cursor enhancement signal indicating a cursor location, gating means serving to couple said first control signal and said cursor enhancement signal to said selectively actuated inverter thereby displaying an inverted, underlined character on the display screen.

3,868,674
VISUAL DISPLAY APPARATUS INCLUDING A LIQUID CRYSTAL DISPLAY PANEL

Jean Hubertus Josef Lorteije, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 310,173, Nov. 28, 1972, abandoned. This application June 20, 1974, Ser. No. 481,343
Claims priority, application Netherlands, Dec. 9, 1971, 7116844
Int. Cl. G09f *9/32*; **G02f** *1/18*
U.S. Cl. 340—324 M **7 Claims**

1. Visual display apparatus comprising:

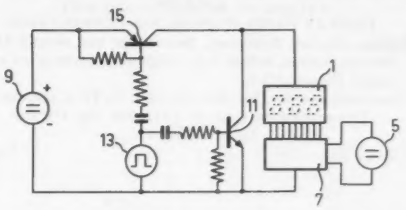
A. a liquid crystal display panel;

B. direct voltage supply means comprising first and second terminals;

C. controllable semiconductor impedance means connected to form a parallel circuit with said display panel;

D. a pulse voltage source connected to said semiconductor means to cause said semiconductor means to be alternately conductive and nonconductive; and

E. means for rapidly reducing said pulse voltage to substantially zero by short circuiting said direct voltage supply means comprising an impedance connected in series with said source of direct voltage and said parallel circuit

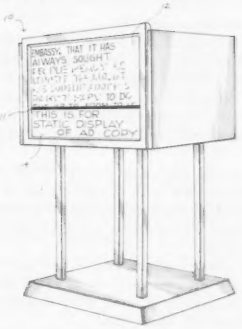


whereby the voltage across means for controlling said display is reduced substantially to zero when said semiconductor means is conductive.

3,868,675
DISPLAY SYSTEM WITH COMBINED DYNAMIC AND STATIC DISPLAY

James H. Firmin, Lake San Marcos, Calif., assignor to Capsule Communications, Inc., San Marcus, Calif.

Filed Sept. 4, 1973, Ser. No. 393,720
Int. Cl. G08b *5/36*
U.S. Cl. 340—334 **6 Claims**



1. A display system for combined display of news-service information and advertising messages, the system comprising:

an input to the system for serially receiving from an external news-service line digital data signals representing characters forming incoming news-service information;

first and second memory means;

means responsive to the serially received signals for accumulating in the first memory means a plurality of items of line data, each item of line data comprising a plurality of groups of signals, each group being encoded to represent a character of the incoming news-service information;

means for storing into the second memory means signals representing a plurality of advertising messages;

a display board;

display apparatus supported by the display board and comprising first display means responsive to signals obtained from the first memory means to display a dynamic representation of a plurality of items of line data and second display means responsive to signals obtained in a cyclical sequence from the second memory means to display in a corresponding sequence static representations of a plurality of selected advertising messages; and

means for obtaining the signals from the first memory means to couple them to the first display means and multiplexing means for obtaining the signals from the second memory means to couple them to the second

display means so as to display simultaneously the news-service information and an advertising message.

3,868,676

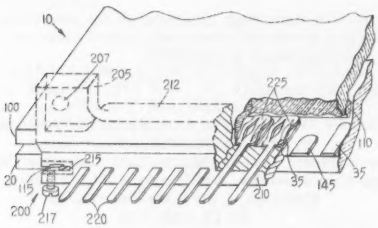
DISPLAY PANEL ELECTRODE TERMINATION

William Michael Hennessey, Somerville, and Ronald Owen Wescott, Edison, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 201,655, Nov. 24, 1971, abandoned. This application June 18, 1973, Ser. No. 370,786

Int. Cl. G09f *9/32*

U.S. Cl. 340—336 **56 Claims**



1. A display device comprising

an envelope including a pair of flat, insulating plates which are parallel to each other and spaced apart to define a gas-filled electric discharge region between them,

a plurality of cathode electrodes seated on one of the plates and a plurality of different electrical conductors connected to them and terminating along an edge of this first plate,

at least one anode electrode seated on the other of said plates in association with selected ones of the cathode electrodes and having a lead terminating along an edge of this other plate, which edge is parallel to an adjacent edge of the first plate,

the terminals of the cathode connectors and of the anode lead(s) being on opposing surfaces of the respective plates for receivably mating with external connecting means between the plates, and

means for sealing the gas discharge region between the plates along a predetermined perimeter and leaving the cathode and anode terminals exposed for receiving the connecting means.

3,868,677

PHASE-LOCKED VOLTAGE-TO-DIGITAL CONVERTER

Marshall C. Kidd, Wayland, Mass., assignor to General Electric Company, Lynn, Mass.

Continuation-in-part of Ser. No. 264,733, June 21, 1972,. This application June 11, 1973, Ser. No. 368,592

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 AD **24 Claims**

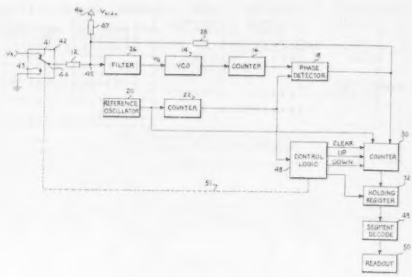
1. A voltage conversion circuit comprising:

a. first circuit means having an input responsive to a voltage for generating an output signal having a frequency that is a function of the voltage at its input, said output signal frequency being substantially equal to the frequency of a first reference signal when a quiescent voltage is present at the first circuit means input;

b. second circuit means responsive to the first reference signal and to the first circuit means output signal for generating a signal having a first time duration proportional to the phase difference between the first reference signal and the first circuit means output signal and a second time duration inversely proportional to said phase difference;

c. input impedances means for coupling an unknown input voltage to the first circuit means input;

d. feedback impedance means for negatively feeding back the output signal of the second circuit means to the input of the first circuit means, whereby said phase difference is made a function of the unknown input voltage when the first circuit means input has the quiescent voltage thereat; and



e. output counter means responsive to the first time duration of the second circuit means output signal and to the frequency of a second reference signal for counting the number of cycles of said second reference signal that occur during said first time duration whereby the counter generates a digital number that is a function of the unknown input voltage.

3,868,678

ANALOGUE-TO-DIGITAL CONVERTORS

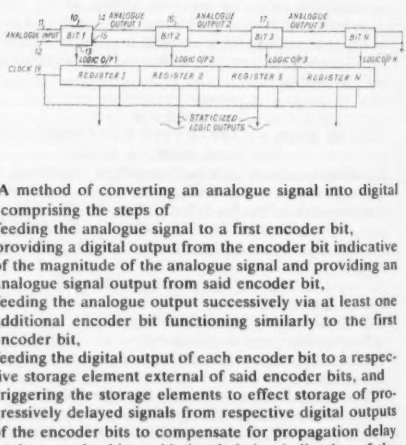
Peter Colin Michael, Newbury, England, assignor to Micro Consultants Limited, Newbury, England

Filed Aug. 7, 1973, Ser. No. 386,341

Claims priority, application Great Britain, Aug. 10, 1974, 37390/72

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **7 Claims**



5. A method of converting an analogue signal into digital form comprising the steps of

a. feeding the analogue signal to a first encoder bit,

b. providing a digital output from the encoder bit indicative of the magnitude of the analogue signal and providing an analogue signal output from said encoder bit,

c. feeding the analogue output successively via at least one additional encoder bit functioning similarly to the first encoder bit,

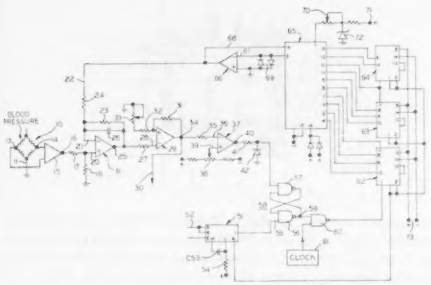
d. feeding the digital output of each encoder bit to a respective storage element external of said encoder bits, and

e. triggering the storage elements to effect storage of progressively delayed signals from respective digital outputs of the encoder bits to compensate for propagation delay in the encoder bits, said signals being indicative of the instantaneous level of the analog signal.

3,868,679
BLOOD PRESSURE AMPLIFIER WITH ZERO BALANCING MEANS

Harold N. Arneson, Oak Creek, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,165
Int. Cl. H03k 13/17
U.S. Cl. 340—347 AD 2 Claims



1. Means for correcting a device that responds to signals from a blood pressure transducer for the offset signal of the transducer, comprising:

a. summing amplifier means having an output and respective inputs for a correction signal and a signal from said transducer,

b. comparator means having an output and also having at least two inputs one of which is coupled with said amplifier means output, the output of said comparator means changing state in response to a correction signal and reference voltage signal to said summing means inputs becoming substantially equal, and means for supplying a reference voltage signal to an input to said comparator means,

c. a source of pulses having a constant repetition rate,

d. pulse counting means coupled with said source, said counting means being constructed and arranged for producing a digital signal corresponding in magnitude with the number of pulses counted and which signal increases in magnitude at a substantially constant rate,

e. means for activating said counting means when production of a correction signal is desired,

f. means for converting said digital signal representative of the count by said counting means to an analog signal and means for storing said analog signal which constitutes said correction signal,

g. means for coupling said correction signal to its summing means input,

h. means for deactivating said counting means in response to said comparator means output changing state,

i. gate means interposed between said pulse source and said counting means,

j. switch means for controlling said gate means,

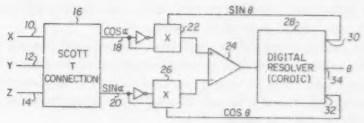
k. one-shot multivibrator means for controlling said switch means and for clearing said counting means, said counting means being cleared when said multivibrator means is being switched to enable gating of pulses through said gate means when said multivibrator is in another of its states,

l. said switch means also responding to said comparator means changing state by disabling said gate means from providing pulses to said counting means to thereby effect said deactivating of said counting means.

3,868,680
ANALOG-TO-DIGITAL CONVERTER APPARATUS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Dallas, Tex.

Filed Feb. 4, 1974, Ser. No. 439,185
Int. Cl. H03k 13/02
U.S. Cl. 340—347 SY 4 Claims



1. Converting apparatus comprising, in combination:

first and second signal supplying means for supplying analog signals indicative respectively of sine and cosine to be converted to a digital indication where α is an angle the trigonometric functions of which are to be converted;

first multiplying means including first and second inputs and an output;

means connecting said first signal supplying means to said first input of said first multiplying means;

second multiplying means including first and second inputs and an output;

means connecting said second signal supplying means to said first input of said second multiplying means;

comparator means, including input and output means, connected to receive signals from said outputs of said first and second multiplying means, said comparator means providing an analog output indicative of which of said first and second multiplying means is supplying the largest magnitude output;

CORDIC type resolver means, including input means and first and second output means, said resolver means supplying outputs of sin θ and cos θ at said first and second output means respectively, wherein the values of the signals at said outputs thereof change as a function of signals supplied to the input thereof and θ is an approximation of the angle α, said resolver operating over a predetermined plurality of digital word times comprising a frame of words, the cofunction sin and cos digital output signals changing on each succeeding word of a frame as a function of the polarity of the signal received from the comparator means, as a function of the word time in a frame and as a function of the value of the cofunction digital output signal in the preceding word time;

means connecting said output means of said comparator means to said input means of said resolver means;

means connecting said first output means of said resolver means to said second input of said first multiplying means; and

means connecting second output means of said resolver means to said second input of said second multiplying means.

3,868,681
CHARACTER INPUT EQUIPMENT

Chishio Ohyama; Makoto Tachibana, and Takeshi Takada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Sept. 21, 1972, Ser. No. 290,981
Claims priority, application Japan, Oct. 4, 1971, 46-77021
Int. Cl. G08c 1/00
U.S. Cl. 340—365 1 Claim

1. A character input equipment comprising:

a character plate having a plurality of characters arranged in rows and columns in a matrix form;

a plurality of pairs of spaced parallel current drive lines disposed corresponding to each row direction beneath said character plate;

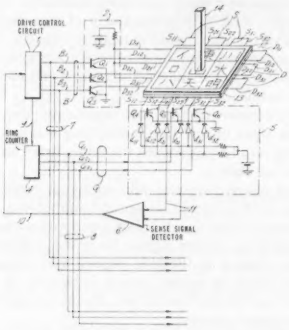
a drive means having a plurality of current drive circuits for sequentially supplying a drive current pulse to said pairs of current drive lines one pair at a time;

a plurality of pairs of spaced parallel sense lines disposed corresponding to each column under the plate and perpendicularly intersecting the plurality of current drive lines whereby the four intersections formed by each pair of drive and sense lines underlies one of said characters;

a sense signal detection circuit;

sense means coupled to said drive means and having sense line selection circuits for sequentially coupling one of said sense line pairs to said detection circuit said sense means being advanced after all of said drive lines have received a drive current pulse;

a single indication bar adapted to be positioned in close proximity to the character plate and at any location along



the surface thereof for selecting a desired character on the plate and for electromagnetically coupling a pair of current drive lines with a pair of sense lines corresponding to the character associated therewith;

said sense signal detection circuit having means for detecting current changes in the sense line pair connected thereto and caused by bringing the bar close to a desired character on said plate when one of the drive line pairs is pulsed, said current being supplied to the current drive line corresponding to the desired character in the row position on the character plate;

means coupled to said detection circuit for halting the stepping of said drive line circuits when said detection means is activated;

and means coupled to said drive circuits and said sense line circuits for transferring the binary outputs thereof and relating to the selected character to utilization means whereby the binary signals correspond to the character on the character plate upon which said bar is positioned.

3,868,682

LIGHT COLUMN HAVING STACKED ELEMENTS

Joseph Simon, Colombes; Raymond Ingrain, Chatou, and Charles Jourdan, Louveciennes, all of France, assignors to La Telemecanique Electrique, Nanterres, France

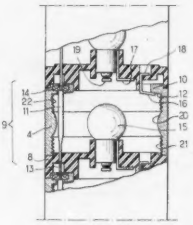
Filed Mar. 6, 1972, Ser. No. 231,950

Claims priority, application France, Mar. 10, 1971, 71.08407

Int. Cl. G08b *5/36*

U.S. Cl. 340—366 R **5 Claims**

1. A light column made up of at least partly transparent signalling units held together only by engaging one on top of the other an electric bulb being fitted in each of the units so as to light up one of them when the leads which feed it are energized, the various leads coming from a base which supports the device, characterized in that each signalling unit comprises, inside a transparent glass casing of cylindrical shape, fixed conductors which pass through it, the number of said conductors corresponding to the maximum number of signalling units that can be accomodated plus one return conductor common for all signalling units, each of these units being closed at one end by an opaque solid partition compris-



ing support means for the said electric bulb and fastening means of a first type, while the other end comprises an annular partitioning portion which gives access to the electric bulb and includes fastening means of a second type whose shape enables them to engage with said fastening means of the first type, when the two adjoining signalling units are in one particular relative position, obtained by partial relative rotation of the said two adjoining units.

3,868,683

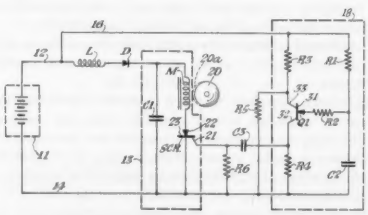
SOLID STATE BELL RINGING SYSTEM

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Aug. 11, 1971, Ser. No. 170,927

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 R **6 Claims**



1. A solid state bell ringing arrangement comprising in combination,

a. an elastically deformable bell device responsive when repeatedly deformed by a pulsating magnetic force for producing an audible ringing sound,

b. an electromagnet placed adjacent said bell device for deforming said bell device when the magnet is energized by an energy pulse,

c. a source of direct current energy,

d. an energy storage arrangement comprising a capacitor, an inductor, and a diode connected in series across said energy source for efficiently charging said capacitor when discharged,

e. a normally non-conducting silicon controlled rectifier having a gating electrode and with its conduction path connected in series with said electromagnet across said capacitor, and

f. a relaxation oscillator circuit arrangement having an output terminal coupled to said gating electrode of said controlled rectifier for periodically actuating said recti-

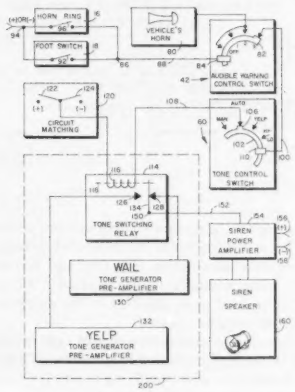
fier to conduction to discharge said capacitor through said electromagnet.

3,868,684

EMERGENCY VEHICLE SIREN SWITCHING APPARATUS

Ewing D. Nunn, Jr., 2430 Terraza Pl., Fullerton, Calif.

Filed Jan. 7, 1972, Ser. No. 216,002
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 E **6 Claims**



1. The combination of a vehicle and an audible warning system which comprises:

An electronic circuit having a given electrical capacitance for generating an electrical signal to provide a siren tone having a relatively moderate frequency of rise and fall between its high and low tones in the form of a wail tone;

a siren speaker;

electrical circuit means to decrease the capacitance of said electrical circuit for electrically altering said electronic circuit to provide a second signal effecting a second siren tone having a greater frequency of rise and fall between its high and low tones in the form of a yelp tone;

switch means to selectively connect said electrical circuit means for causing said yelp tone to be generated in lieu of said wail tone; and,

an electromotive force of a suitable potential to power the electronic circuits for providing said tones.

3,868,685

RADAR DIGITAL DETECTOR AND BEAM SPLITTER

Richard D. Wilmont, Yorba Linda, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 20, 1970, Ser. No. 91,449
Int. Cl. G01s *9/04*
U.S. Cl. 343—5 DP **13 Claims**

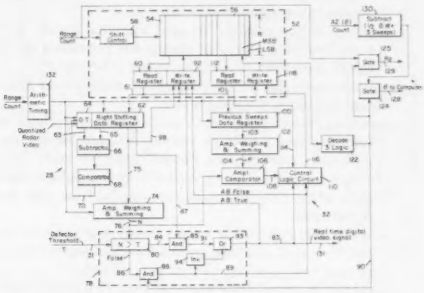
1. A system for detecting a statistical target over a plurality of range intervals and within a predetermined azimuth angle in response to transmitting pulses of energy to a target as a radar beam scanning over said target and for receiving target signals while said beam is illuminating said target comprising a source of quantized amplitude video data, of a plurality of bits for each target signal,

memory means responsive to said source for storing target data quantized from target signals received over an azimuth beam width for each of a plurality of range bins,

register means responsive to said memory means and to said source for receiving a present beam width of data,

weighting means coupled to said register means for providing an impulse response of a predetermined beam shape,

summing means coupled to said weighting means for providing a weighted sum of the present sweep,



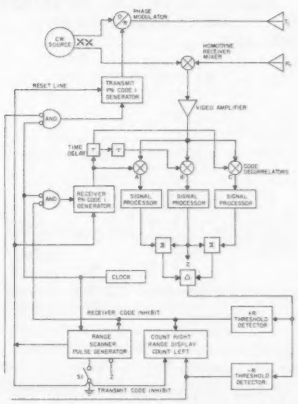
and comparator means for comparing the weighted sum with a threshold value to indicate a statistical target.

3,868,686

RANGE TRACKING DEVICE FOR A PORTABLE ATTACK WARNING RADAR

William Ray Magorian, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1973, Ser. No. 351,726
Int. Cl. G01s *9/28*
U.S. Cl. 343—7 A **3 Claims**



1. A portable attack warning radar range tracking system comprising:

radio frequency carrier means for generating a carrier at a predetermined frequency;

first generating means for supplying a voltage output that varies from a maximum to a minimum voltage to form a pulsed repetitive code;

phase modulating means coupled to electrically receive an output from said first generating means and an output from said radio frequency carrier means for supplying an output signal to shift the phase of the carrier in response to the pulsed repetitive code voltage output of said first generating means;

antenna means for transmitting the output of said phase modulating means and receiving an echo return signal from a target;

second generating means for supplying a voltage output that varies from a maximum to a minimum voltage to form a pulsed repetitive code that is identical to the pulsed repetitive code output of said first generating means;

clock means coupled to said first generating means via a first gate and coupled to said second generating means via a second gate for clocking said first and second generating means in time sequence;

receiver mixer coupled to said antenna means and said radio frequency carrier means for providing an output signal representative of the target echo signal;

code decorrelator means coupled to said receiver mixer and said second generating means;

summing means coupled to said code decorrelator means for supplying a voltage output that represents the time difference between the pulsed repetitive code output of said second generating means and the pulsed repetitive code of the target echo signal coupled from said receiver mixer; and

inhibit pulse generating means coupled to receive the output from said summing means for supplying inhibit signals to said first gate and to said second gate;

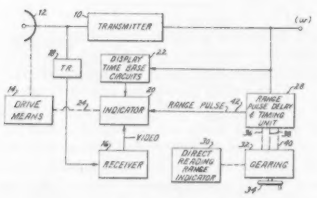
whereby the time difference between the pulsed repetitive code output of the second generating means and the pulsed repetitive code output from the receiver mixer is reduced to a minimum by inhibit signals to the first and the second gating means for allowing a moving target to be tracked as its range to a radar location increases and decreases.

3,868,687

TIME MEASURING SYSTEM

Leman Goldman, Jr., Pennsauken, N.J., and Ted E. Dunn, Levittown, Pa., assignors to Radio Corporation of America, Princeton, N.J.

Filed Oct. 31, 1955, Ser. No. 543,836
Int. Cl. G01s *9/16, 9/06*
U.S. Cl. 343—13 R **14 Claims**



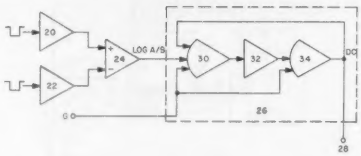
14. In a radar ranging system, in combination, a stable source of sinusoidal oscillations; means for deriving from said source a series of first pulses spaced fixed intervals from one another; a source of randomly occurring pulses; selector means connected to receive said randomly recurring pulses and said first pulses for selecting certain ones of said first pulses at a randomly recurring rate; phase shifting means for shifting the phase of said sinusoidal oscillations; means for deriving from said phase shifted sinusoidal oscillations a series of second pulses; a step-down counter circuit; cyclic means operatively associated with said phase shifting means and receptive of said selected pulses for rendering said step-down counter operative beginning at a time in coincidence with a given one of said second pulses, the output of said step-down counter comprising a series of third pulses spaced a given plurality of times said fixed intervals from one another; selector means receptive of said third pulses for selecting a given one of said third pulses; and means including said cyclic gate means responsive to a shift in phase between said series of first pulses and said series of second pulses an amount approximately equal to one period of said series of third pulses for rendering said step-down counter responsive to the one of said second pulses spaced from said given second pulse an amount equal to one period of said series of third pulses in the direction opposite to that of said phase shift.

3,868,688

HIGH SPEED VIDEO TRACK LOOP

Richard Smith Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 21, 1973, Ser. No. 372,441
Int. Cl. G01s *9/22*
U.S. Cl. 343—16 M **7 Claims**



1. A monopulse, direction finding system, comprising:

means for receiving radar frequency information and converting said information into first and second electrical pulses wherein said first pulse appears in the sum channel, and the second pulse appears in the difference channel, of said monopulse system;

means coupled to said receiving and converting means for logarithmically amplifying said electrical pulses;

means coupled to said amplifying means for combining said logarithmically amplified pulses;

means coupled to said combining means for comparing the combination to a variable voltage level;

means coupled to said comparing means for averaging the result of said comparison in time and providing the system output, which output is fed back to said comparing means as said variable voltage level; and

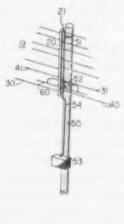
electrical pulse providing means coupled to said comparing means and said averaging means for selectively gating both said means simultaneously.

3,868,689

LOG PERIODIC POLE MOUNTED MARKER BEACON ANTENNA

Charles C. Liu, Dallas, and Dean A. Hofer, Richardson, both of Tex., assignors to Texas-Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,736
Int. Cl. G01s *1/68*
U.S. Cl. 343—101 **13 Claims**



1. An ILS marker beacon antenna which comprises:

a. an antenna having a pair of spaced parallel conductors forming a balanced transmission line and a plurality of radiators of graded lengths extending from said pair of spaced parallel conductors to form a log periodic array,

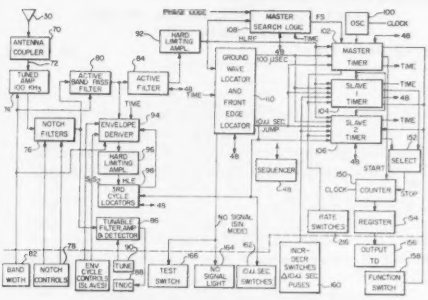
b. an unbalanced RF transmission line connected to feed said antenna at the apex, and

c. a dipole monitor antenna structure mounted parallel to said radiators and including structure electrically to terminate said antenna by a short circuit near the bottom of said log periodic antenna to monitor the antenna field while minimizing back radiation thereof.

3,868,690
LORAN RECEIVER ENVELOPE-CYCLE DISCREPANCY COMPENSATION

Herbert E. Miller, Brookline, Mass., assignor to Epsco, Incorporated, Westwood, Mass.

Filed Apr. 13, 1973, Ser. No. 350,996
Int. Cl. G01g *1/26*
U.S. Cl. 343—103 **16 Claims**



1. For use with Loran receiver, apparatus for limiting the effect of the envelope-cycle discrepancy of received Loran transmissions comprising:

means for receiving Loran signals corresponding to Loran pulse transmissions:

means responsive to received Loran signals for identifying a point on the pulse envelope;

means operative in response to a control for adjusting the identified point on the envelope for received signals from at least one Loran slave stations;

means responsive to the identified point and responsive to carrier cycles in the received Loran signals for identifying a predetermined carrier cycle point which bears a predetermined relationship to the identified envelope points; and

means for indicating an adjustment in the control for the identified envelope point in response to known position with respect to the location of the Loran stations whose transmissions are being received.

3,868,691
LORAN RECEIVER AUTOMATED MASTER SEARCH

Herbert E. Miller, Brookline, and Michael Harry Myers, Framingham, both of Mass., assignors to Epsco, Incorporated, Westwood, Mass.

Filed Apr. 13, 1973, Ser. No. 350,995
Int. Cl. G01s *1/26*
U.S. Cl. 343—103 **15 Claims**

13. In a Loran receiver, a method for automatically synchronizing the time of reception of Loran signals to receiver time comprising the steps of:

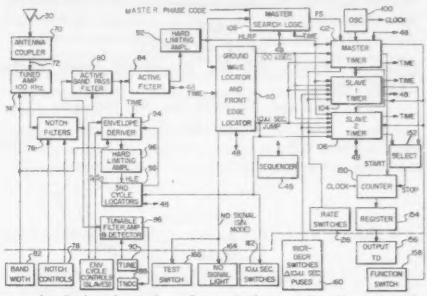
receiving Loran signals from a set of Loran station transmissions;

comparing the carrier phase of successive pulse of received signals with a preset phase code corresponding to the phase code for the particular Loran station set;

said comparing step continuing for an interval of at least the period of repetition of the phase code in said received signal;

indicating when the compared phase code and received signal carrier phase correlate; and

verifying the correlation of said compared phase code and

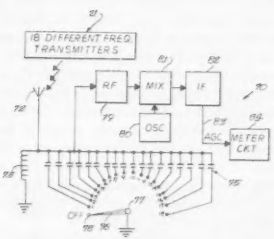


received signal carrier phase during a plurality of said intervals.

3,868,692
GOLF YARDAGE FINDER

Roland L. Woodard, 1308 National Ave., New Bern, N.C. 28560, and Patrick L. Hughes, 4338 W. Rose Lane, Glendale, Ariz. 85301

Filed Sept. 13, 1973, Ser. No. 396,731
Int. Cl. G01s *3/02*
U.S. Cl. 343—112 D **3 Claims**



1. A golf yardage distance measuring system to provide a visual read-out of the distance between a golfer and a green on a golf course, comprising in combination:

a plurality of transmitter units to be located at the green of each hole of a particular golf course, each transmitter adapted to radiate an RF signal outwardly from the green and over the approach fairway leading up to said green, a receiver unit to be carried by a golfer who is playing on said particular golf course, said receiver unit includes a meter read-out device and an RF signal strength detecting circuit coupled thereto to be responsive to one of said plurality of transmitter units, said read-out device being calibrated in a distance measurement corresponding to the distance measurement common to said particular golf course, said receiver unit includes an automatic gain control circuit responsive to the reception of RF signal energy transmitted from a selected one of said plurality of transmitter units, said automatic gain control circuit producing an output voltage having a value indicative of the distance between said transmitter unit and said receiver unit, said automatic gain control circuit including a calibrated meter for indicating the relative range of distances to be measured in the order of about between 0 and 200 yards; whereby

said receiver unit is activated by a selected one of said plurality of transmitter units to provide direct indication of said read-out device of the distance of said golfer and said selected one of said plurality of trasmitter units

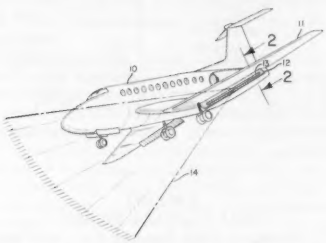
thereby allowing the golfer to know exactly which golf club to use for the approach shot to the green.

3,868,693

FLAP ANTENNA

David W. Young, 627 No. Beachwood Drive, Burbank, Calif. 91506

Filed Apr. 27, 1973, Ser. No. 355,065
Int. Cl. H01q *1/28, 13/00, 19/10*
U.S. Cl. 343—708 **5 Claims**



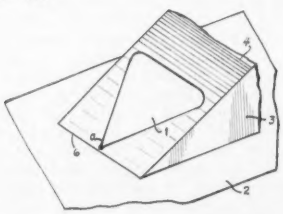
1. In combination:
a. an elongated horizontally disposed wave guide antenna having an elongated horizontal aperture providing a general narrow fan-shaped beam in a vertical plane;
b. an aircraft having a wing trailing edge landing flap control defining a long straight surface at least as long as said elongated aperture and visible to line of sight viewing from the horizon in front of the aircraft along the center line of the aircraft when the landing flap is moved to a lowered position during an approach for a landing;
c. means mounting said antenna in said landing flap in such a position that said beam pattern from said antenna is directed forwardly generally towards the horizon and downwardly from the horizon only when the long straight surface of the flap is in its lowered position during a landing approach to expose completely said elongated aperture to line of sight viewing from the horizon along the center line of the aircraft;
d. means for passing electromagnetic energy into the wave guide antenna when the flap is lowered during a landing approach, whereby the antenna can be easily installed, replaced, or serviced by simply removing the flap from the remaining portion of the aircraft wing.

3,868,694

DIELECTRIC DIRECTIONAL ANTENNA

Hans H. Meinke, Gauting Bavaria, Germany, assignor to United States of America as represented by the Secretary of the Air Force

Filed Aug. 9, 1973, Ser. No. 386,924
Int. Cl. H01q *19/06*
U.S. Cl. 343—753 **8 Claims**



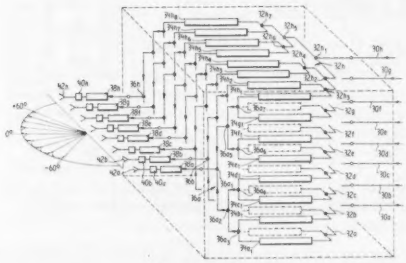
1. A directional antenna comprising:
a. a wedge-shaped dielectric member having a pair of surfaces inclined to each other and joined at an intersection line;
b. a first conducting surface mounted on one of the pair of dielectric surfaces and having the general shape of a triangle;
c. a second conducting surface mounted on and extending beyond the other of the pair of dielectric surfaces with the first and second conducting surfaces forming a line of constant characteristic impedance; and
d. means for feeding the antenna, the feeding means being connected to the apex of the triangle of the first conducting surface and on the second conducting surface in the immediate vicinity of the intersection line.

3,868,695

CONFORMAL ARRAY BEAM FORMING NETWORK

Eugene H. Kadak, Pasadena, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 18, 1973, Ser. No. 380,305
Int. Cl. H01q *13/00*
U.S. Cl. 343—778 **16 Claims**



1. A matrix network for intercoupling a plurality of terminals and a plurality of antenna elements disposed in an antenna array having any suitable axis, said matrix network comprising:
a. a plurality of sets of fixed time delay means;
b. a first set of signal interconnecting means including a plurality of power dividers forming a first corporate feed, each for interconnecting one of the said terminals and each of said delay means of one of said sets; and
c. a second set of signal interconnecting means including a plurality of power dividers forming a second corporate feed, each for interconnecting at least one delay means of each set of said plurality of sets and one of said antenna elements, whereby a signal present at one of said terminals corresponds to signals at each of said antenna elements;
d. each delay means imparting a time delay to a signal passing therethrough, selected such that a beam oriented in a selected direction with respect to said axis of said antenna array is associated with one of said terminals.

3,868,696

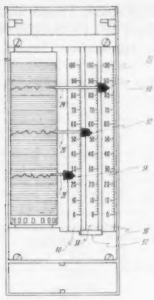
ROTATABLE RECORDER SCALE ARRANGEMENT

Melvin J. Post, and James L. McCarthy, both of Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,050
Int. Cl. G01d *13/04*
U.S. Cl. 346—17 **14 Claims**

1. In a strip chart recorder including at least one writing element, a scale mechanism for the writing element comprising:
a plurality of elongated generally rectangular shaped thin strips, wherein the width of the strips is substantially less than the length, and the thickness of the strips is substantially less than the width, and wherein the length and width of the strips define a surface adapted for receiving scale graduations for indicating the positions said writing element;

means for pivotally mounting said plurality of strips for rotation along an axis that extends along the length of the strip, and



means for simultaneously rotating each of said plurality of strips from a position wherein said surfaces face the front of the instrument to a position wherein the surfaces are generally normal to the front of the instrument.

3,868,697

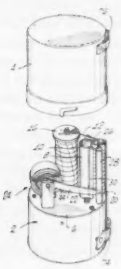
TEMPERATURE RECORDER

Harry Schefe, Pacific Palisades, Calif., assignor to Caltemp Instrument Inc., Pacific Palisades, Calif.

Filed Dec. 6, 1973, Ser. No. 422,184

Int. Cl. G01k *5/70*; **G01d** *15/28*

U.S. Cl. 346—68 **6 Claims**



1. A recorder for recording a sensed condition on a flexible elongate strip of recording medium over an elapsed period of time, the recorder comprising:

a housing;

support means connected to said housing for releasably supporting a coiled portion of the strip for rotation relative to said housing with the strip having one end remote from the coiled portion;

take-up means rotatably connected with said housing, said take-up means connected to the one end of the strip for unwinding the strip and for rewinding portions of the strip onto said take-up means;

said support means and said take-up means supporting the strip for releasing motion in a direction outwardly from said housing and perpendicular to the direction of travel of the strip between said support and take-up means;

a timing mechanism connected with said take-up means for continuous rotation thereof at a predetermined rate thereby causing the strip to travel continuously in a direction lengthwise of the strip along a predetermined path extending between said support means and said take-up means;

sensing means positioned along said predetermined path in contact with the strip for producing thereon a trace which varies in amplitude in a direction generally transverse of the strip in response to variation in the sensed condition;

an arm connected with said housing for swinging motion between an operative position in which portions of said arm are in overlapping relation to an edge portion of the strip remote from said housing to prevent releasing motion thereof, and an inoperative position in which said arm is spaced away from the strip during releasing motion thereof; and

disengaging means connected with said detent means for moving said sensing means out of contact with the strip whenever said arm is moved to the inoperative position.

3,868,698

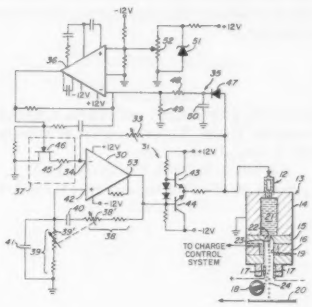
STIMULATION CONTROL APPARATUS FOR AN INK JET RECORDER

John L. Dressler, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 24, 1973, Ser. No. 409,132

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **16 Claims**



1. Apparatus for stimulating a filament of recording fluid to break up into uniformly sized and regularly spaced drops comprising electically driven vibrating means having a naturally resonant frequency near the natural frequency of said filament, an amplifier for supplying an electrical driving signal for said vibrating means, and positive and negative feedback means for causing oscillation of said amplifier; said negative feedback means comprising means for generating a negative feedback signal corresponding to the impedance of said vibrating means and causing oscillation of said amplifier to occur at a frequency which minimizes said impedance.

3,868,699

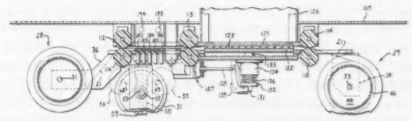
PRINTING MACHINE

Christina B. Gardner, 725 Cherry St., Santa Rosa, Calif. 95404, and Bruce A. Odelberg, 151 Overhill Rd., Orinda, Calif. 94563

Filed Jan. 12, 1973, Ser. No. 323,058

Int. Cl. B41b *17/38*

U.S. Cl. 354—12 **4 Claims**



1. In a printing machine having an elongated first member mounted for lengthwise movement and providing a series of longitudinally spaced image defining areas of different widths, and an elongated image receiving second member mounted

for lengthwise movement perpendicularly to and transversing said first member, and means for moving said members for juxtaposing any of said image areas and a succession of image receiving areas on said second member, and means effecting image transfer from said first member to said second member, said first named means comprising a plurality of width codes on said first member correlated with said image defining areas, and a motor drive and multiple ratio transmission connected to advance said second member by distances determined by said width codes, the improvement comprising:

a motor driven disc having a drive face, and a driven wheel mounted for rotation about an axis parallel to said face; a carriage supporting said disc and being mounted for reciprocation along said axis;

an electric motor mounted on said carriage and being connected to and driving said disc;

means moving said wheel and face into and out of engagement and being connected to and controlled by said width code reading means;

manually operable means connected to said carriage and effecting reciprocation thereof for controlling the drive ratio of said drive transmission and establishing a selectable spacing constant multiplier for said width codes; and

an indicator showing the relative drive ratio between said wheel and disc.

3,868,700

ELECTRIC EXPOSURE CONTROL CAMERA

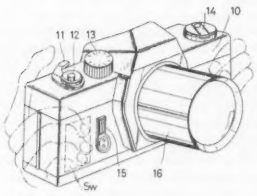
Yoshio Kuramoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1973, Ser. No. 331,131

Claims priority, application Japan, Feb. 12, 1972, 47-14982

Int. Cl. G03b *7/08*

U.S. Cl. 354—23 **9 Claims**



1. In a photographic camera including a camera casing, a light detecting circuit for detecting light from an object to be photographed, an indication means for indicating exposure value corresponding to the output of said light detecting circuit, an electric shutter circuit for controlling an exposure in accordance with the output of said light detecting circuit, a current source for energizing at least said light detecting circuit, a normally open switch arranged between said current source and said light detecting circuit, a switch operating member for closing said normally open switch, and a shutter release member for initiating shutter mechanism, the improvement wherein said switch operating member comprises a sensor plate responsive to pressure thereon to close said switch, said sensor plate arranged on and extending over said camera casing at an area where the tip of any finger or thumb of a hand which holds the camera casing naturally put when a person who operates the camera holds the casing for photographing by means of one hand with the other hand permitted to move for the operation of said shutter release member, said sensor plate being disposed on a wall of said camera different from that of said shutter release member.

3,868,701

AUTOMATIC FLASH CONTROL SYSTEM FOR CAMERAS

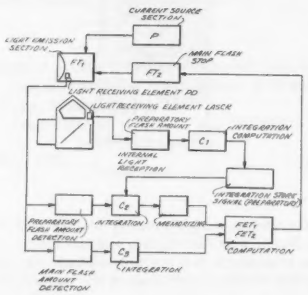
Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 19, 1973, Ser. No. 398,808

Claims priority, application Japan, Sept. 22, 1972, 47-95276

Int. Cl. G03b *7/08, 15/05*

U.S. Cl. 354—33 **12 Claims**



1. In a camera having an objective, flash means having a preparatory flash operation prior to a main flash operation for providing a given amount of preparatory flash illumination during said preparatory flash operation, internal photosensitive means situated within the camera for receiving light which has travelled through the objective during the preparatory flash operation and for determining when a predetermined amount of light is internally received, external photosensitive means situated with respect to said flash means for receiving light during said preparatory flash operation, and preparatory electrical circuit means electrically connected with said external means and said internal means for integrating the amount of light received by said external means during said preparatory flash operation, said internal means terminating the integration of said preparatory electrical circuit means without terminating the preparatory flash illumination from said flash means when said predetermined amount of light is received by said internal means, the integrated value achieved at the termination of integration being retained for subsequent use during the main flash illumination.

3,868,702

MIRROR REFLEX CAMERA

Karl-Peter Strauss, Volkmarode, and Richard Weiss, Braunschweig, both of Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Nov. 16, 1973, Ser. No. 416,355

Claims priority, application Germany, Nov. 24, 1972, 2257608

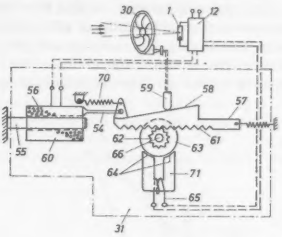
Int. Cl. G03b *9/02*

U.S. Cl. 354—42 **9 Claims**

1. A mirror reflex camera of the type having a lens, a diaphragm of adjustable aperture, a photocell receiving light through said lens and diaphragm, drive means for varying the aperture of the diaphragm, and means for arresting movement of said drive means when a desired aperture size is reached during operation of said drive means, characterized by the fact that a ferro magnetic disk is coupled to said drive means to move therewith, and that an electro-magnet has a pole piece normally located close to said disk with a small clearance, and means for magnetizing said electro-magnet when said drive means is to be arrested, to cause said electro-magnet to act as a brake to stop movement of said disk and thereby to arrest movement of said drive means.

7. Braking mechanism for stopping adjusting movement of a diaphragm aperture adjusting drive, comprising a shaft cou-

pled to said drive to turn while the aperture of the diaphragm is changing, a ferro-magnetic disk mounted on said shaft to turn therewith, an electro-magnet having a pole piece close to a portion of said disk with a slight air gap between the pole piece and the disk so long as the adjusting drive is intended to perform adjusting movement, and a coil for magnetizing said



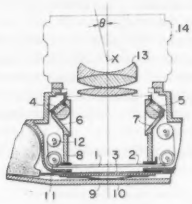
electro-magnet when it is desired to stop the adjusting movement of said drive, said disk and magnet being so arranged that when said electro-magnet is magnetized, it will draw said disk into contact with said pole piece to produce a braking action stopping rotation of said disk.

3,868,703

LIGHT MEASURING DEVICE FOR SHUTTER CONTROL MECHANISM

Hiroshi Ueda, Nara, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 145,311, May 30, 1971, abandoned. This application May 14, 1973, Ser. No. 360,308
Claims priority, application Japan, May 20, 1970, 45-43567
Int. Cl. G03b *7/08*
U.S. Cl. 354—49 **7 Claims**



1. In a photographic camera of the type including an objective lens and a light sensitive member, light shielding means movably disposed in front of and adjacent said light sensitive member, said light shielding means including a front shutter curtain movable from a cocked position to a rest position thereof to initiate exposure of said light sensitive member, and further including a rear shutter curtain movable from a cocked position to a rest position thereof to terminate the exposure, an electric circuit means for timing the actuation of said rear curtain, the improvement comprising:

said front shutter curtain including a surface facing said objective lens and having a light scattering layer thereon with substantially the same reflecting power and scattering property as that of said light sensitive member;

photoelectric means connected in said circuit means and mounted within said camera for receiving light passing through said objective lens and reflected from said light scattering layer when said front shutter curtain is in front of light sensitive member, from said light scattering layer and said light sensitive surface when said light sensitive member is being uncovered, and from said light sensitive member when said light sensitive member is uncovered.

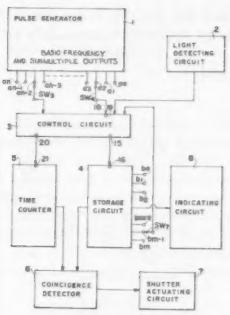
2. The camera according to claim **1** wherein said surface of said front shutter curtain facing said objective lens has a film of thin transparent material coated thereon, said material having dispersed therein particles having a refractive index different from that of said material, thereby imparting to said front shutter curtain the scattering property which is substantially the same as that of said light sensitive member.

3,868,704

CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

Seiji Yamada, and Kotaro Yata, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Aug. 28, 1972, Ser. No. 284,105
Claims priority, application Japan, Aug. 27, 1971, 46-65175
Int. Cl. G03b *9/12, 7/08*
U.S. Cl. 354—50 **5 Claims**



1. An exposure control system for a single lens reflex camera having a shutter mechanism comprising:

a time base unit for generating a plurality of pulse trains at respective submultiple frequencies of a basic frequency and having a plurality of first output terminals for respectively providing a pulse train at said basic frequency and each of said submultiple frequencies;

a detecting circuit for generating an electrical signal in response to operation of a shutter release member with a delay determined in accordance with scene light;

a first switching means for selecting one of said first output terminals;

a second switching means for selecting one of said first output terminals;

a storage circuit for storing pulses from said output terminal selected by said first switching means, said storage circuit including a plurality of first flip-flop circuits connected in series said storage circuit having an input terminal, and a plurality of second and third output terminals each respectively connected to corresponding outputs of each of said first flip-flop circuits;

a pulse counter circuit for counting pulses from said output terminal selected by said second switching means;

a control circuit including a gate circuit closed in response to the operation of a shutter release member for initiating storage of pulses within said storage circuit and opened in response to said electrical signal for terminating storage of said pulses and means for initiating operation of said pulse counter in conjunction with opening of the shutter mechanism for initiating an exposure;

means for generating a signal to close the shutter mechanism to terminate exposure in response to the coincidence between the number of pulses in said storage circuit and said pulse counter circuit;

means for manually setting the exposure time;

a third switching means for selecting one of said second output terminals in conjunction with the operation of said means for manually setting the exposure; and

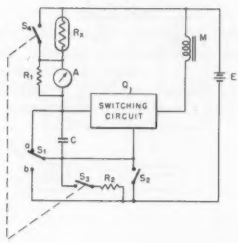
a feedback circuit connected between said third switching means and said gate circuit for feeding the change of output from said manually selected second output terminal connected to the output of a corresponding one of said first flip-flop circuits to said gate circuit to open said gate circuit for terminating said storage of pulses within said storage circuit when the change of the output of said corresponding flip-flop occurs because of said storage of pulses.

3,868,705

CONTROL CIRCUIT FOR ELECTRONIC SHUTTER FOR ELECTRONIC SHUTTER HAVING BATTERY-CHECKING CIRCUIT

Kiyoshi Katai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha

Filed July 16, 1973, Ser. No. 379,777
Claims priority, application Japan, July 14, 1972, 47-82526
Int. Cl. G03b *17/18, 7/08*
U.S. Cl. 354—51 **2 Claims**



1. An electronic shutter control circuit for a camera shutter electronically controlled comprising, means comprising, a light-responsive element sensing light received from a scene to be photographed for controlling exposure time as a function of the intensity of light received, a switching circuit connected to said means to control the closing of a shutter, a light-intensity indicating circuit having an ammeter for indicating visually the intensity of the light at said scene, a power source for selectively energizing the light-responsive element, a power source checking circuit for checking the current delivered from said power source to determine its adequacy, switch means to independently control exposure time when taking an exposure, taking a light intensity reading on said ammeter and a reading on said ammeter of the current available from said power source, the first-mentioned means including a capacitor connected to said light responsive element defining an RC time constant circuit therewith, for controlling said exposure time, means connecting said ammeter and light-responsive element in series between a terminal of said power source and an input of said switching circuit, and said switch means including a change-over switch normally short-circuiting the capacitor.

3,868,706

TELEVISION CAMERA MOUNT

Harold Steingold, 407 16 St., Santa Monica, Calif. 90402

Filed Oct. 12, 1973, Ser. No. 406,025
Int. Cl. G03b *37/02*
U.S. Cl. 354—95 **4 Claims**

1. An integral pan/tilt camera apparatus comprising the combination of:

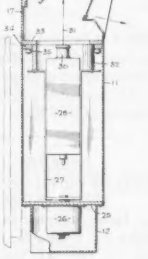
a stationary housing;

a turret movably mounted on said housing for horizontal rotation;

a mirror pivotally carried on said turret for vertical rotation;

a camera having a center of gravity carried on said housing and mounted for rotation in conjunction with said turret, said camera center of gravity being critically located at the center of rotation so that said camera is in static-balance during said rotational movements;

motor means for driving said camera and said turret in horizontal rotation about a vertical axis and for driving said mirror in vertical rotation about a horizontal axis;



an opaque support bracket rotatably mounting said camera in said housing so that its optical axis is directed towards said mirror;

a bearing means rotatably supporting said bracket and said camera on said housing;

said bearing means includes a central aperture through which said camera optical axis passes to said mirror;

a drive motor secured to said housing having a drive shaft operably coupled to said camera support bracket;

a tilt drive motor carried on said turret operably coupled to said mirror; and

an eccentric drive train interconnecting said tilt drive motor with said mirror.

3,868,707

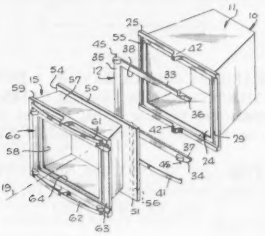
FILM HOLDING STRUCTURES FOR CAMERAS

Gerhard I. W. Bahnsen, Box 1297, South Lake Tahoe, Calif. 95705

Filed Mar. 22, 1974, Ser. No. 452,246
Int. Cl. G03b *19/02*
U.S. Cl. 354—202 **11 Claims**

1. An assembly comprising a camera body having an opening at its rear side with a rearwardly facing shoulder extending at least partially about said opening; a lens mounted to said body at a location to focus an image of a photographic subject rearwardly through said opening; a retainer mounted movably to the rear of said body and yieldingly urged forwardly relative to said shoulder and adapted to yieldingly urge forwardly against said shoulder a film holder containing film onto which an image may br focused by said lens; said retainer being generally U-shaped to form two generally parallel spaced arms extending essentially along two opposite sides of said opening and a cross-piece interconnecting first ends of said arms and extending essentially along a third side of said opening, so that said arms and cross-piece define and extend about a cutaway region in said retainer which is opposite said opening in the body to pass light rays from said lens rearwardly through said opening and then through said cutaway region when a film

holder is not present between said shoulder and retainer; and a focal adapter detachably connectible to the rear of said camera body in lieu of said film holder to locate a film a predetermined distance rearwardly of the position in which a film is held by said holder when the latter is held against said shoulder by said retainer, to thereby effect a change in the subject-to-camera distance at which an image is in focus on a film, said focal adapter including a flange which is slidable transversely of the axis of said lens from a position in which it is detached from the camera body into a space between said shoulder and said retainer and to an active position in which said flange is yieldingly urged forwardly against said shoulder by said retainer; said focal adapter having a hollow portion which is carried by said flange and projects rearwardly therefrom through said cutaway region of said U-shaped retainer to a location rearwardly beyond the retainer and contains a



passage through which light rays from the lens can pass; said arms of said U-shaped retainer having second ends at a side of said adapter opposite that at which said cross piece is located and which second ends are spaced apart and free of interconnection to define therebetween an entrance throat through which said hollow rearwardly projecting portion of the adapter is movable transversely of said lens axis into said cutaway region of the U-shaped retainer as said flange slides transversely into said space between said shoulder and said retainer; said adapter including film retaining means at the rear of said rearwardly projecting portion thereof defining a generally transverse guideway into which a film holder and carried film are insertable to a position rearwardly beyond said U-shaped retainer for focusing an image through said lens, said opening in the camera body, said flange, said U-shaped retainer and said rearwardly projecting hollow portion of the adapter onto the film.

3,868,708

FILM METERING MECHANISM FOR CAMERAS

Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching; Horst Karl, Munich; Rolf Schroder, Baldham, and Karl Wagner, Ottobrunn, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

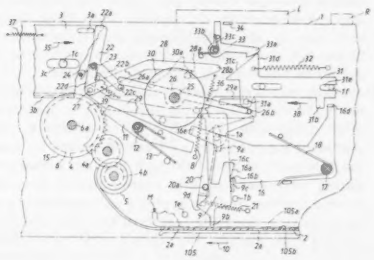
Filed Sept. 12, 1973, Ser. No. 396,454

Claims priority, application Germany, Sept. 13, 1972, 2244824

Int. Cl. G03b *19/04*

U.S. Cl. 354—206 **25 Claims**

1. In a photographic apparatus for use with roll film having a row of perforations, one for each film frame, particularly in a still camera for use with film which is stored in a magazine and one side of which is adjacent to a web of backing paper, a combination comprising film transporting means actuatable to move the film lengthwise in a predetermined direction and along a predetermined path; input means movable from a first to a second position to thereby actuate said film transporting means, and back to said first position; a movably mounted feeler adjacent to said path in line with the row of perforations and arranged to penetrate into an oncoming perforation when the film moves lengthwise and to thereupon move from a first to a second position in response to continued lengthwise movement of film; locking means operable to deactivate said film transporting means in response to movement of said feeler to said second position; means for biasing said feeler against the film while said feeler dwells in said first position and while said film transporting means is being actuated to move a perforation toward said feeler, including a movably mounted displacing member and means for yieldably urging said displacing member against said feeler in said first position of said feeler; means for biasing said feeler to said first position upon completion of movement of said feeler to said second



position, comprising a movably mounted restoring member which abuts against said feeler during actuation of said film transporting means and means for yieldably urging said restoring member against said feeler in said second position of said feeler; disengaging means actuatable by said input means and arranged to disengage said displacing member from said feeler subsequent to penetration of said feeler into an oncoming perforation; and control means for disengaging said restoring member from said feeler in said first position of said input means.

3,868,709

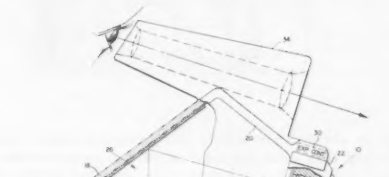
PHOTOGRAPHIC APPARATUS WITH FILM RECIPROCATING TRANSPORT SYSTEM

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1974, Ser. No. 4^9,727

Int. Cl. G03b *1/00*

U.S. Cl. 354—212 **24 Claims**



1. Photographic apparatus for use with a film container holding at least one film unit, the film unit being of the type comprising leading and trailing edges, a plurality of layers including photosensitive and image-receiving layers, and an integral supply of fluid processing composition adapted to be distributed between a predetermined pair of the layers, the film container being of the type including a film withdrawal slot therein through which the film unit is adapted to be advanced, leading edge first, to withdraw the film unit from the film container and an opening providing access for externally

mounted means to engage and advance the film unit, leading edge first, through the film withdrawal slot, said photographic apparatus comprising:

a housing;

carrier means for receiving and supporting such a film container holding at least one film unit;

means mounting said carrier means within said housing for movement between first and second positions;

static film advance means fixedly mounted in said housing and positioned to extend through the opening in the film container supported by said carrier means, when said carrier means is moved from said first position toward said second position, for engaging and advancing the film unit, leading edge first, through the film withdrawal slot in the film container in response to movement of said carrier means towards said second position;

processing means mounted on said carrier means for movement therewith and being located in a predetermined relationship with the film withdrawal slot in the film container supported by said carrier means for receiving the film unit advanced through the film withdrawal slot during movement of said carrier means towards said second position and for applying a compressive pressure progressively along the length of the film unit from the leading edge towards the trailing edge to distribute the fluid processing composition between the predetermined pair of layers in the film unit; and

means operable to move said carrier means between said first and second positions within said housing.

3,868,710

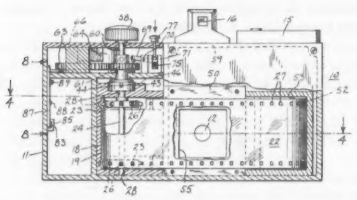
STILL CAMERA FILM METERING MECHANISM

John H. Van Osch, 3415 Honey Creek Ct., Milwaukee, Wis. 53219

Division of Ser. No. 238,696, March 27, 1972, , which is a division of Ser. No. 501,321, Oct. 22, 1965, Pat. No. 3,653,310. This application Dec. 14, 1973, Ser. No. 424,679

Int. Cl. G03b *19/04*

U.S. Cl. 354—213 **11 Claims**



1. In combination with a still camera having a housing provided with a compartment adapted to receive a film cartridge containing a rotatable film sprocket having teeth adapted to engage perforations in a photographic film and a noncircular portion exterior of the cartridge to push the film out of a light trap opening in said cartridge and in front of the camera lens, film metering means comprising

a film-actuating member rotatably mounted within said camera housing and having a noncircular portion complementary to and adapted to releasably engage said noncircular portion of said sprocket,

an indexing member operatively connected to said film actuating member and being rotatably mounted within said camera housing and carrying a plurality of arcuately spaced apart stop means corresponding to the number of picture frames to be exposed on the film,

latch means within said housing in the path of movement of said stop means as said indexing member rotates for latching each of said stop means as it passes to thereby control the length of film pushed out of said cartridge,

manually operable means on said camera housing for releasing said latch means,

a manually rotatable film winding member on said camera housing operatively connected to said indexing member and to said film-actuating member,

the spacing between the first and second of said stop means being different than that between other adjacent stop means to permit pushing a length of film equal to a leader plus one picture frame out of said light trap opening in the initial movement of said film,

said indexing member having a cartridge-loading position wherein said latch means latches the first of said stop means on said indexing member and said cartridge can be inserted into and withdrawn from said compartment, and including

means on said camera housing for preventing insertion of said cartridge into said compartment when said indexing member is away from said cartridge-loading position.

3,868,711

PHOTOGRAPHIC CAMERA HAVING A DETACHABLY MOUNTED VIEW FINDER CASING

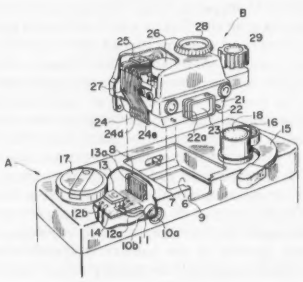
Minoru Sekida, and Masaru Ohba, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1973, Ser. No. 355,812

Claims priority, application Japan, May 10, 1972, 47-53704

Int. Cl. G03b *13/00*

U.S. Cl. 354—219 **6 Claims**



1. A photographic camera comprising:

a camera body with an electronic shutter and a view finder casing detachably mounted on the camera body;

said view finder casing including at least a light measuring circuit including a light receiving element for receiving light rays which are introduced into an optical system of the view finder from a photographic view field;

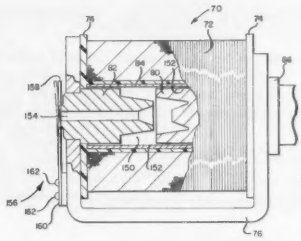
said camera body having mounted thereon a circuit connected to a power source in the form of a battery, a timing circuit operative in response to an input voltage, and a switching circuit operative to terminate the exposure by the electronic shutter;

a flexible printed circuit with a bent portion at one end thereof and with a contact portion adjacent said bent portion, said flexible printed circuit being mounted on one of said camera body and said view finder casing; and the other of said view finder casing and said camera body having connected to the circuit thereof a contact member for contacting engagement with said contact portion of said flexible printed circuit when said view finder casing is mounted in position on said camera body, thereby establishing connection between said power source and said light measuring circuit.

3,868,712
PNEUMATICALLY REACTIVE EXPOSURE CONTROL SYSTEM

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 11, 1973, Ser. No. 349,960
Int. Cl. G03b 9/14
U.S. Cl. 354—230 **31 Claims**



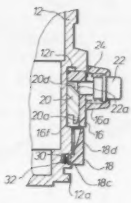
1. An exposure control system comprising:
means defining a light entrance opening;
exposure mechanism means movable about said opening between a closed position blocking the passage of light therethrough and open positions, said opening movement defining a time-dependent variation of aperture values over said opening;
drive means for driving said exposure mechanism means between said positions and including a solenoid having an excitation winding and plunger means arranged in driving association with said exposure mechanism means and retractable to a given location within said excitation winding upon energization thereof, said plunger means being mounted within said solenoid so as to be pneumatically reactive during movement thereof, spring means for exerting a bias to move said plunger means from said retracted location and effect said exposure mechanism means movement toward said open positions upon de-energization of said excitation winding, said solenoid including pneumatic regulation means providing an orifice within said solenoid and being selectively configured to pneumatically regulate the rate of said biased plunger means movement so as to control the rate of said exposure mechanism means opening movement, said regulation means being configured to facilitate the rate of said plunger means movement into said retracted location when said excitation winding is energized; and
control means for selectively energizing and de-energizing said excitation winding to control the said movement of said exposure mechanism means so as to define a select exposure value.

3,868,713
PHOTOGRAPHIC EXPOSURE SETTING MEANS

Gerhard Schwarz, Schaffhauserstr. 12, Munich; Walter Lutz, Bahnhofstr. 11 B, Unterfohring, and Rudolf Lang, Birkenstr. 18, Grafing Banhof, all of Germany

Filed Dec. 18, 1973, Ser. No. 425,927
Claims priority, application Germany, Jan. 5, 1973, 7300355
Int. Cl. G03b 9/07
U.S. Cl. 354—231 **9 Claims**

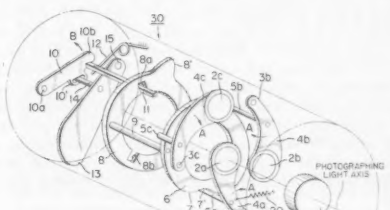
1. Photographic apparatus comprising a mounting part having an optical axis, a diaphragm aperture setting member and an exposure time setting member both mounted on said mounting part for movement relative thereto and relative to each other, a coupling slide mounted on said diaphragm aperture setting member for movement in a direction parallel to said optical axis and transverse to the directions of movement of said setting members, coupling teeth at one end of said slide, cooperating coupling teeth on said time setting member, spring means tending to move said coupling slide in one direction, an operating member mounted on said first setting member for movement in a direction radially with respect to said optical axis, and cooperating inclined surfaces on said slide and said operating member, so formed that when said operating member is displaced radially, said slide is moved in a direction parallel to said optical axis to alter the cooperative relation of the teeth on the slide to the teeth on said second setting member, radical inward displacement of said operating member causing the teeth on said slide to engage the coupling teeth on the time setting member.



3,868,714
FILTER CHANGE-OVER DEVICE IN AN OBJECTIVE LENS FOR A SINGLE LENS REFLEX CAMERA

Takeshi Muryoi, Kawasaki, Japan, assignor to Nippon Kogaku, K.K., Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,344
Claims priority, application Japan, Dec. 17, 1971, 46-119296
Int. Cl. G03b 11/00
U.S. Cl. 354—289 **6 Claims**



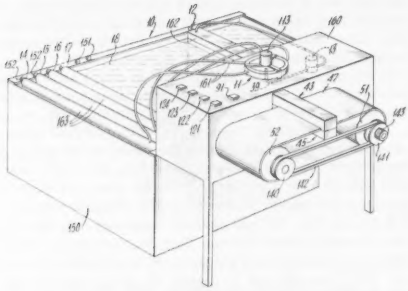
2. A filter change-over device in a tube for an objective lens, the device comprising a plurality of filter members each movable separately between a first position lying in the optical path of the objective lens and a second position lying outside the optical path; a light intercepting member movable between a first position for intercepting the optical path and a second position outside the optical path; and means connecting the filter members and the light intercepting member so that the light intercepting member is in its said second position when any one of the filter members is in its first position, the light intercepting member being in its said first position when none of the filter members are in their first position.

3,868,715

SYSTEM FOR CHEMICAL PROCESSING

James A. Slavin, New York, N.Y., assignor to Noltac Corporation, Jericho, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,664
Int. Cl. G03d *13/00*
U.S. Cl. 354—298 **16 Claims**



13. A system for use in the processing of photographic film comprising a processing tank for holding said film, said tank having a flexible wall, a plurality of solution tanks for holding solutions for a given photographic process, a selector valve having a plurality of first ports and a second port selectively interconnected with said first ports, means connecting separate ones of said first ports to separate solution tanks, self-priming reversible pump means connected between said processing tank and said second port, said valve being mounted above said solution tanks and processing tank whereby fluid substantially completely drains from said selector valve and the connections to said processing tank and solution tanks upon deenergization of said pump means, and program control means for selectively operating said selector valve and pump means sequentially to empty solution in said solution tanks into said processing tank and to return solutions from said processing tank to said solution tank in accordance with a programmed sequence, said program control means comprising a pair of parallel rollers, a program belt removably mounted on said rollers, means for rotating said rollers, sensing means mounted to sense program control indicia on said belt for controlling said valve and said reversible pump, said system further comprising agitating means for agitating liquid in said processing tank, said agitating means comprising vibrator means removably affixed to said wall of said processing tank, means for selectively actuating said agitator means, and manual override means for controlling the operation of said agitator means, pump means and means for moving said rollers.

3,868,716

COMPRESSED OPEN CELL FOAM NOZZLE SEALING ASSEMBLY

Irving S. Lippert, Lexington, and Joseph A. Stella, West Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

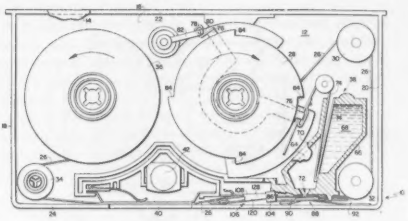
Filed Nov. 19, 1973, Ser. No. 416,762
Int. Cl. G03d *5/00*
U.S. Cl. 354—317 **31 Claims**

1. A film handling cassette comprising:

a housing configured for retaining a strip of photographic film;

processing means including a dispensing receptacle configured to retain a quantity of processing fluid to be applied to such strip of photographic film subsequent to its exposure, said dispensing receptacle having a dispensing nozzle opening formed therein through which such processing fluid is applied to such photographic film strip; and

sealing means for substantially closing said nozzle opening following dispensing of such fluid, said sealing means including a compressed open cell foam material saturated with a coagulating chemical, said compressed open cell foam material being selectively released for expansion when said compressed open cell foam is contacted by



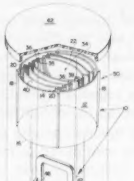
such processing fluid and said coagulating chemical interacts with said processing fluid to coagulate the same, said foam material having an area at least in conformance with the perimeter of said nozzle opening and configured to expand into substantially sealing contact with said perimeter, said chemical coagulating engaged portions of such fluid for preventing egress of such processing fluid from said nozzle opening.

3,868,717

PROCESSING FILM UNITS IN SHEET FORM

Norman W. Cutler, Jr., Braintree, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 4, 1974, Ser. No. 447,570
Int. Cl. G03d *13/08*
U.S. Cl. 354—340 **10 Claims**



1. A rack for use with a container adapted to retain a supply of processing fluid therein for safe guarding and processing a plurality of individual photographic film units in sheet form, said rack comprising:

a chamber having open upper and lower faces;

means joined to inner walls of said chamber for receiving the plurality of film units, said receiving means including a plurality of curved walls having surfaces spaced from each other and side walls cooperating with said curved walls to provide grooves for supporting lateral edges of the film units, said curved and side walls defining a plurality of compartments adapted to retain individual film

units in spaced relationship with each emulsion side of the film units exposed for free contact with the fluid; and

carrying means coupled to said receiving means including a pedestal for elevating said open lower face of said chamber above the container's base section thereby providing a sump to receive sludge and waste particles removed from the film units.

3,868,718

FIELD EFFECT TRANSISTOR HAVING A PAIR OF GATE REGIONS

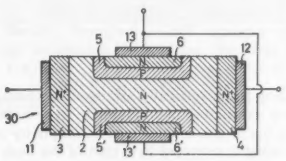
Michio Arai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 26, 1973, Ser. No. 373,731

Claims priority, application Japan, June 30, 1972, 47-66070; Jan. 10, 1973, 48-5700

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—22 12 Claims



1. A field effect transistor having a semiconductor layer of one conductivity type, source and drain regions at opposite ends of said layer, a first gate region in said layer of the opposite conductivity type defining a channel between said source and drain regions, a second gate region is said layer of said one conductivity type separated from said channel by said first gate region, there being a PN-junction between said first and second gate regions and a second PN-junction between said channel and said first gate region, whereby when said first PN-junction is reversely biased and electric charge is stored in said first gate region such that a time delay occurs in the drain current when being switched from off to on condition.

3,868,719

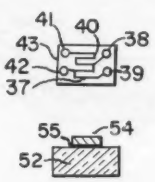
THIN RIBBON-LIKE GLASS BACKED TRANSDUCERS

Anthony D. Kurtz, Englewood; Joseph R. Mallon, Wood Ridge; Harold Bernstein, Hillsdale, and Richard Alan Weber, Denville, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Apr. 2, 1973, Ser. No. 347,226

Int. Cl. H01l *11/00*

U.S. Cl. 357—26 7 Claims



1. A pressure transducer assembly comprising:

a. a piezoresistive element fabricated from a bulk, contiguous, thin ribbon-like layer of silicon, said thin layer being of a "U" shaped configuration,

b. a thin diaphragm fabricated from a dielectric material having a relatively smooth surface and a bond between said smooth surface of said thin diaphragm and said piezoresistive element to secure said thin layer of silicon to said thin diaphragm, to thereby form a composite pressure transducer, said bond characterized in that the same includes a glass of the type capable of conducting current at a temperature above 300°C, said bond being between 20 to 200 angstroms thick; and

c. terminal means positioned on said diaphragm and electrically connected to said piezoresistive element, whereby pressure measurements can be monitored.

3,868,720

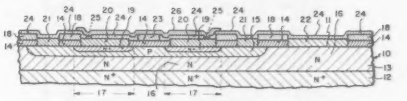
HIGH FREQUENCY BIPOLAR TRANSISTOR WITH INTEGRAL THERMALLY COMPENSATED DEGENERATIVE FEEDBACK RESISTANCE

Thorndike C. New, Scottsdale, Ariz., and Surinder Krishna, Ballston Lake, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1973, Ser. No. 425,668

Int. Cl. H01l *15/00, 11/00*

U.S. Cl. 357—34 4 Claims



1. A high frequency bipolar transistor with integral thermally compensated degenerative feedback resistance comprising:

A. a semiconductor body having at least one major surface; said body having an epitaxial layer adjoining the major surface, and having substrate portion adjoining the epitaxial layer interior of the body, said substrate portion having an impurity concentration therethrough of greater than about 1×10^{18} carriers/cm^3 of a given carrier-type;

B. emitter, base and collector regions in said epitaxial layer; said emitter region adjoining the major surface of the body in at least one strip configuration and having an impurity concentration at the surface of at least about 1×10^{18} carriers/cm^3 of a carrier-type the same as the carrier-type of said substrate portion; said collector region adjoining the substrate portion, adjoining the major surface spaced from the emitter region, having a thickness of less than about 10 microns at active portions thereof, and having an impurity concentration at active portions of less than about 1×10^{14} carriers/cm^3 of a carrier-type the same as the carrier-type of the substrate portion; and said base region being between the emitter and collector regions, adjoining the major surface at least peripherally of the emitter region in an elongated configuration, having a thickness of less than about 2 microns at active portions thereof, having an impurity concentration at the active portions between about 5×10^{14} and 5×10^{17} carriers/cm^3 of a carrier-type opposite at the carrier-type of the emitter and collector regions to form PN junctions therewith;

C. first, second and third metal contacts of strip configurations on the major surface of the body being spaced apart and substantially parallel and making separate ohmic contact to the emitter, base and collector regions, respectively;

D. a dielectric layer on the major surface at least adjacent said first metal contact to the emitter region;

E. a conductor layer of strip configuration on the dielectric layer spaced from and extending substantially parallel to said first metal contact; and

F. a degenerative resistor layer on the first metal contact, the dielectric layer, and the conductor layer extending substantially the length of the first metal contact and conductor layer and making ohmic contact to both the first metal contact and the conductor layer along the length thereof, while remaining substantially insulated

from the second and third metal contacts and the base and collector regions.

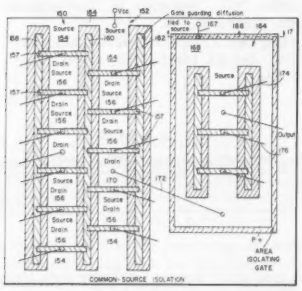
3,868,721
DIFFUSION GUARDED METAL-OXIDE-SILICON FIELD EFFECT TRANSISTORS

Uryon S. Davidsohn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 86,544, Nov. 2, 1970, abandoned. This application Dec. 7, 1970, Ser. No. 95,521

Int. Cl. H01l *11/14*

U.S. Cl. 357—41 **14 Claims**



1. In a MOSFET integrated circuit device including at least a first region and a second region, and a surface passivating layer, the improvement comprising: a body of semiconductor material of a relatively high resistivity and first conductivity type, and having an upper surface;

first and second spaced regions of relatively low resistivity and opposite conductivity type extending from said surface into said body, and each of said first and second regions containing at least one field effect transistor;

an isolation region positioned intermediate said first region and said second region and being of relatively high resistivity and first conductivity type;

said first region extending around said isolation region;

an isolation electrode adherent to said surface and overlying said isolation region and said isolation electrode including an oxide layer of substantially uniform thickness along its length positioned over and in contact with said isolation region, and spurious current flow between the first and second region is only possible through the isolation region and under the combination of said isolation electrode and oxide layer of substantially uniform thickness along its length.

3,868,722
SEMICONDUCTOR DEVICE HAVING AT LEAST TWO TRANSISTORS AND METHOD OF MANUFACTURING SAME

Claude Jan Principe Frederic Le Can, and Walter Steinmaier, both of Nijmegen, Netherlands, assignors to U.S. Philips Corp., Briarcliff Manor, N.Y.

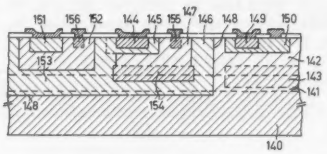
Division of Ser. No. 154,438, June 18, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 294,465

Claims priority, application Netherlands, June 20, 1970, 7009088

Int. Cl. H01l *27/02, 29/72, 27/04*

U.S. Cl. 357—44 **11 Claims**

1. A semiconductor integrated circuit device comprising a semiconductor body portion of a first type conductivity and containing at least a first and a second transistor isolated by a P-N junction, the semiconductor body portion having a substantially plane surface, the first transistor comprising a group of three successive semiconductor zones alternating in conductivity type and adjoining said surface, the second zone having a part extending to below the first zone and the third zone extending to below the second zone, the second zone of the first transistor being of a second type conductivity and comprising besides the part present intermediate the first and the third zones a cup-shaped part which coheres with said intermediate part and which entirely surrounds the said third zone in the semiconductor body except for the part adjoining the surface, the second zone cup-shaped part forming with the first type body portion a generally cup-shaped isolating P-N junction which entirely surrounds the first transistor except for the part thereof adjoining the surface, the second transistor comprising three vertically arranged successive semiconductor zones alternating in conductivity type with its second zone also being of the second type conductivity and with its third zone being constituted by a part of the body portion of the first type conductivity, said second transistor being of the same type as the first transistor but being isolated therefrom by the isolating P-N junction, the first zone of the first transistor and the first zone of the second transistor having the same depth, the second zone intermediate part of the first transistor and the second zone of the second transistor having the same depth, said zones of the same depth having been formed simultaneously.



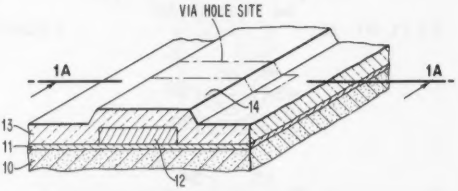
3,868,723
INTEGRATED CIRCUIT STRUCTURE ACCOMMODATING VIA HOLES

John S. Lechaton, Wappingers Falls; Leo P. Richard, Hyde Park, and Daryl C. Smith, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 375,298, June 29, 1973, Pat. No. 3,804,738. This application Dec. 13, 1973, Ser. No. 424,267

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—54 **3 Claims**



1. In a planar semiconductor integrated circuit chip structure having a semiconductor member with a planar surface at which the devices in the circuit are formed and a metallization pattern selectively connected to said surface and disposed on a plurality of levels separated by layers of electrically insulative material above said surface, a via hole interconnected structure comprising

a metallization line pattern on a first level with respect to said surface having line portions narrower in width than the remainder of the pattern,

an electrically insulative layer covering said first level metallization pattern,

via holes extending through said insulative layer to said narrower width line portions, said via holes being wider than and overlapping said line portions,

a second level metallization pattern on said insulative layer, and

metal interconnectors in said via holes connecting said first and second level patterns.

3,868,724

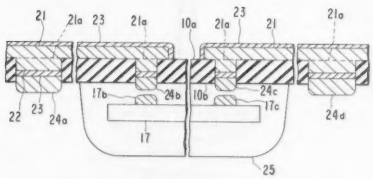
MULTI-LAYER CONNECTING STRUCTURES FOR PACKAGING SEMICONDUCTOR DEVICES MOUNTED ON A FLEXIBLE CARRIER

Frank A. Perrino, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Nov. 21, 1973, Ser. No. 417,999

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—65 **6 Claims**



1. A connecting structure for semiconductor devices, which comprises:

a. a tape of insulating material having a plurality of holes formed in a predetermined pattern;

b. electrical conductors formed on a first surface of said tape, wherein portions of said conductors cover one or more of said holes thereby to expose said portions of said conductors through said holes; and

c. electrical contacts formed through said holes in ohmic contact with said portions of said conductors such that electrical connection can be made to said conductors, by means of said contacts, from an object adjacent the second surface of said tape, and said semiconductor devices are electrically insulated from said electrical conductors by said tape in all areas except adjacent said electrical contacts.

3,868,725

AN INTEGRATED CIRCUIT LEAD STRUCTURE

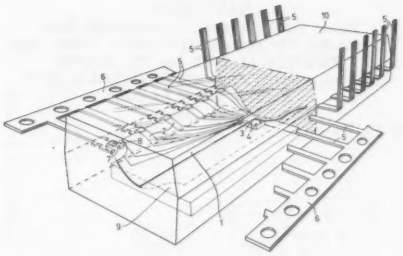
Philip Johan De Graaff, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 294,911, Oct. 4, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,387

Claims priority, application Netherlands, Oct. 14, 1971, 7114112

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—68 **5 Claims**



1. An integrated circuit lead structure for providing externally available electrical access to a plurality of spaced contact areas on one surface of an integrated circuit semiconductor body while providing a heat dissipation path from an opposing surface thereof, comprising:

a flexible insulating foil having opposing edges, said foil supporting a pattern of spaced flexible conductor tracks arranged into two groups of tracks extending respectively from said opposing edges of said foil toward the center thereof;

two patterns of spaced conductor strips having first and second ends, said first ends positionally corresponding with and respectively gripping said two groups of tracks at said opposing edges of said foil, said first ends of said conductor strips being positioned in a plane spaced from said one surface of a semiconductor body, said patterns being spaced from one another by a distance less than the foil dimension therebetween, thereby allowing said foil to sag toward said semiconductor body, the centrally located ends of said tracks terminating at and being in electrical contact with said spaced contact areas on said semiconductor body;

a heat conductive plate in thermal contact with and supporting said opposing surface of said semiconductor body; and

an envelope sealed to said plate to form therewith an enclosure encasing said semiconductor body and said foil, said envelope supporting said conductor strips adjacent said first ends,

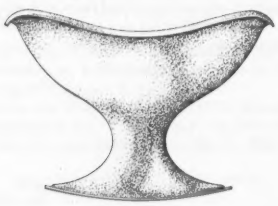
whereby electrical access is provided from said second ends of said strips to said contact areas and said plate provides a heat dissipation path from said semiconductor body.

DESIGNS

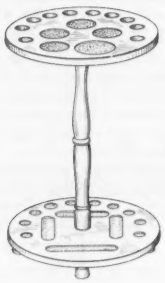
GRANTED FEBRUARY 25, 1975

234,379
BABY SEAT
Pietro Catelli, Casnate Con Bernate, Italy
(% Novelty, Via Padova, 217—20127 Milan, Italy)
Filed Mar. 13, 1972, Ser. No. 234,458
Claims priority, application Italy Oct. 8, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7

234,380
CRIB
Bruno Verlet, Mourenx, France, assignor to S.A. Leda-France, Avon, France
Filed Sept. 6, 1973, Ser. No. 394,620
Claims priority, application France June 19, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14



234,381
RACK FOR BILLIARD CUES
Samuel H. Berger, Skokie, Ill., assignor to Ajay Enterprises Corporation, Delavan, Wis.
Filed Feb. 5, 1973, Ser. No. 329,664
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—27

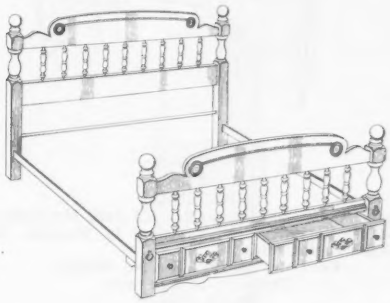


234,382
SECRETARIAL CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis Products Limited, Cobourg, Ontario, Canada
Filed June 11, 1973, Ser. No. 369,113
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

234,383
CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis Products Limited, Cobourg, Ontario, Canada
Filed June 19, 1972, Ser. No. 263,993
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

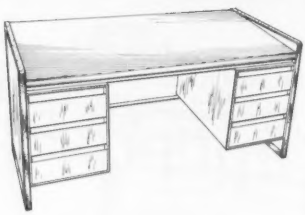
234,384
CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis Products Limited, Cobourg, Ontario, Canada
Filed June 11, 1973, Ser. No. 369,065
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

234,385
BED
Raymond R. Turner, Morristown, Tenn., assignor to Ludlow Corporation, Needham Heights, Mass.
Filed Apr. 25, 1973, Ser. No. 354,333
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—80

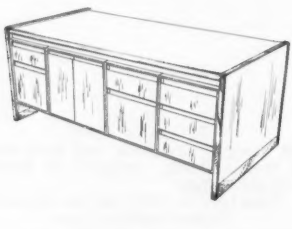


234,386
STORAGE UNIT
Ronald R. Hodges, Grandville, and Jack Hockenberry, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,859
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159

234,387
DESK
Ronald R. Hodges, Grandville, and Jack Hockenberry, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,852
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161

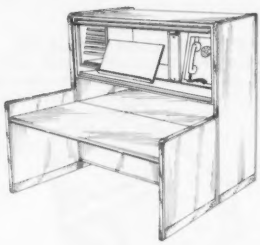


234,388
CREDENZA
Ronald R. Hodges, Grandville, and Jack Hockenberry, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,857
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164

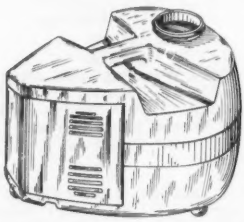


234,389
FILING UNIT
Ronald R. Hodges, Grandville, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,858
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164

234,390
WORK STATION
Ronald R. Hodges, Grandville, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,860
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



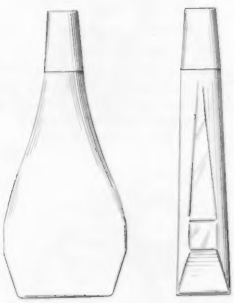
234,391
CANISTER FOR CARPET SHAMPOO MACHINE
C. Bruce Hewson, Toronto, Ontario, Canada, assignor to York Lambton Corporation Ltd., Montreal, Quebec, Canada
Filed Mar. 7, 1973, Ser. No. 338,847
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166



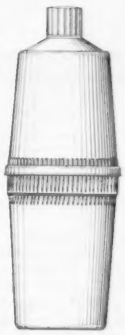
234,392
SELF TAPPING SCREW
Keiichi Yamamoto and Kozo Yamamoto, Tokyo, Japan, assignors to Yamamoto Byora Co., Ltd., Tokyo, Japan
Filed Sept. 11, 1973, Ser. No. 396,213
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267

234,393
BOTTLE
Jerome Gould, Los Angeles, Calif., assignor to Stroh Brewery Company, Detroit, Mich.
Filed Mar. 26, 1973, Ser. No. 344,954
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100

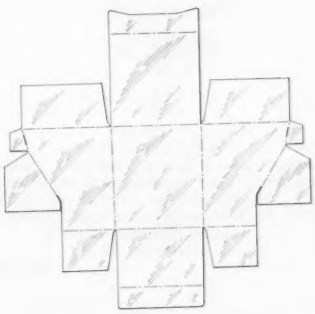
234,394
BOTTLE OR SIMILAR ARTICLE
P. Metzger, Russikon, Switzerland (% Colgate-Palmolive Co., 300 Park Ave., New York, N.Y. 10022)
Filed Sept. 27, 1972, Ser. No. 292,765
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



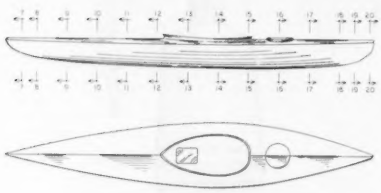
234,395
BOTTLE OR SIMILAR ARTICLE
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of design application Ser. No. 246,517, Apr. 21, 1972. This application Sept. 28, 1972, Ser. No. 292,977
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—125



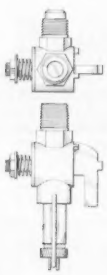
234,396
CARTON BLANK
Earl J. Killy, Kankakee, Ill., assignor to Olinkraft, Inc.
Filed Mar. 14, 1973, Ser. No. 341,130
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—245



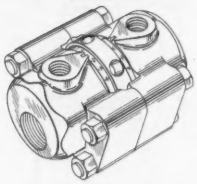
234,397
KAYAK
Willy M. Eriksen, 9710 9th Ave. NW.,
Seattle, Wash. 98117
Filed Jan. 30, 1973, Ser. No. 328,093
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63



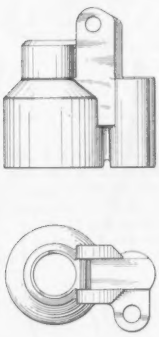
234,398
GAS LEAK DETECTOR
Eugene F. Griss, 2851 Albon St.,
Maumee, Ohio 43537
Filed Oct. 24, 1972, Ser. No. 300,142
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1



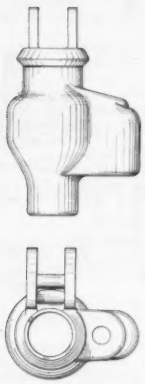
234,399
RESTRICTOR VALVE
Julian S. Taylor, 8300 SW. 8,
Oklahoma City, Okla. 73108
Filed Nov. 6, 1972, Ser. No. 304,152
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



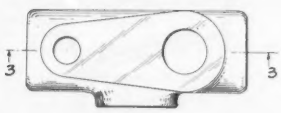
234,400
BALL COCK VALVE BODY
Henry J. Kachergis, 89 Larchmont Ave.,
Waterbury, Conn. 06708
Filed May 7, 1973, Ser. No. 358,023
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



234,401
BALL COCK VALVE BODY
Henry J. Kachergis, 89 Larchmont Ave., Waterbury, Conn. 06708
Filed May 8, 1973, Ser. No. 358,452
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

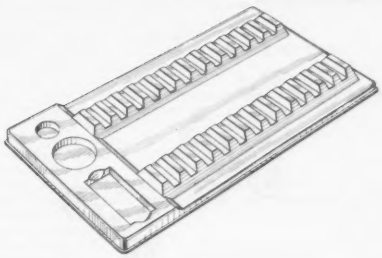


234,402
MANIFOLD FOR A HEAT TRANSFER SYSTEM
Robert A. Ogurchak, McKeesport, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Filed May 3, 1973, Ser. No. 356,741
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

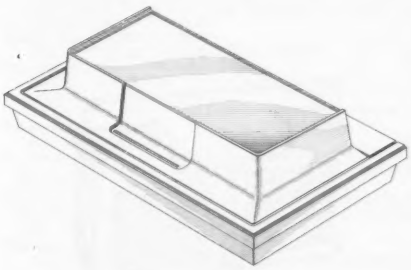


234,403
HOBBY KILN
Ronald E. Erickson, Oconomowoc, Wis., assignor to Sybron Corporation, Rochester, N.Y.
Filed Apr. 24, 1974, Ser. No. 463,744
Term of patent 7 years
Int. Cl. D23—*03*
U.S. Cl. D23—82

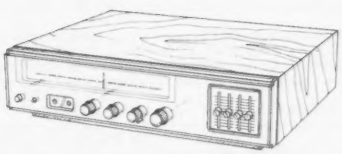
234,404
DENTAL TRAY
Kenneth E. Merrill, 8136 Juniper, Shawnee Mission, Kans. 66208, and Burton K. Cox, 6400 W. 100th, Overland Park, Kans. 66212
Filed Mar. 29, 1973, Ser. No. 346,075
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 R



234,405
CONTROL CONSOLE FOR A TELEVISION ELECTRONIC GAME
Gary L. McMahon, Fort Wayne, Ind., and John Brooks Van Dyke, Los Angeles, Calif., assignors to The Magnavox Company, Fort Wayne, Ind.
Filed Jan. 2, 1973, Ser. No. 320,359
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 E

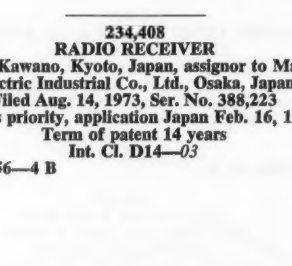


234,406
AMPLIFIER
Kunio Hoshino, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 9, 1974, Ser. No. 468,513
Claims priority, application Japan Nov. 12, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

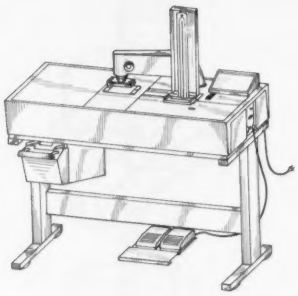


234,407
TOY MODEL CAR
George Barris, North Hollywood, Calif., assignor to Zee Toys, Inc.
Original design application Dec. 18, 1972, Ser. No. 316,411, now Patent No. 230,178, dated Jan. 29, 1974. Divided and this application Jan. 22, 1974, Ser. No. 435,597
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN

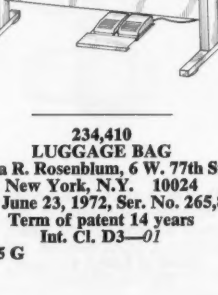
234,408
RADIO RECEIVER
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 14, 1973, Ser. No. 388,223
Claims priority, application Japan Feb. 16, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



234,409
ELECTRIC PRINTING MACHINE OR SIMILAR ARTICLE
Robert E. Schmeck, Greenwich, Conn., assignor to Adrema Pitney Bowes G.m.b.H., Heppenheim an der Bergstrasse, Germany
Filed Apr. 4, 1973, Ser. No. 347,707
Claims priority, application Germany Oct. 5, 1972
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



234,410
LUGGAGE BAG
Julia R. Rosenblum, 6 W. 77th St., New York, N.Y. 10024
Filed June 23, 1972, Ser. No. 265,885
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaronson, Charles D.; Rendina, John F.; and Fancy, Robert D., to GCA Corporation. Spectrometric apparatus. 3,868,499, Cl. 235-151.350.

AB Hagglund & Soner: *See*—
Strombeck, Per Albin, 3,868,138.

Abad, Bill A. Instrument for inscribing parallel lines. 3,867,761, Cl. 33-41.00F.

Abbott, Frank R., to United States of America, Navy. Towable sonar array with depth compensation. 3,868,623, Cl. 340-7.0PC.

Abbott Laboratories: *See*—
Stein, Herman Hal; and Darby, Thomas Dillard, 3,868,451.

Abe, Masahiro; and Terada, Hiroshi, to Glory Kogyo Kabushiki Kaisha. Sheet-holding device in sheet-dispensing machine. 3,868,044, Cl. 221-6.000.

Abrams, Macy L.: *See*—
Schow, Harvey B.; and Abrams, Macy L., 3,867,769.

Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED: *See*—
Donckel, George H.; and Streel, Dominique Th.F.L.J.M., 3,868,106.

Adachi, Takashi: *See*—
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Adams, Charles Wesley: *See*—
Meinhardt, Norman A.; and Adams, Charles Wesley, 3,868,330.

Adams, Frazier. Music transposing rule. 3,867,866, Cl. 84-473.000.

Adey, Anthony John: *See*—
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; Jones, Christopher Robin; and Adey, Anthony John, 3,867,918.

Adler, Robert, to Zenith Radio Corporation. Poling of ferro-electric substrates. 3,868,553, Cl. 317-262.00F.

AEG-Elotherm GmbH: *See*—
Reinke, Friedhelm; and Stengel, Edgar, 3,867,847.

Aeroquip Corporation: *See*—
Cox, Robert G., 3,867,999.

Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, to Omega Louis Brandt & Frere S.A.; and Alcyon Electronique et Physique S.A. Method and device for fixing a watch balance spring to a collet. 3,868,490, Cl. 219-121.00L.

Agee, Robert B.; and Rodriguez, Manuel, to Ethyl Corporation. Process for reducing trivalent titanium content in slag. 3,868,441, Cl. 423-69.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Hartwig, Karl; and Maurischat, Gunther, 3,868,666.
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, 3,868,708.

Aguilo, Adolfo: *See*—
Horlenko, Theodore; Fisher, Gene J.; and Aguilo, Adolfo, 3,868,410.

Ahlgren, Erick L.; McMorris, Arthur H.; and Schweppe, Joseph L., to Houston Engineering Research Corporation. Apparatus for printing labels directly onto packages, containers and the like. 3,867,882, Cl. 101-35.000.

Ahmed, Adel Abdel Aziz. Current amplifier. 3,868,581, Cl. 330-19.000.

Aiken Industries, Incorporated: *See*—
Riendeau, William P., 3,868,614.

Air Products and Chemicals, Inc.: *See*—
Holland, Dewey George; and Beitchman, Burton David, 3,868,408.

Airco, Inc.: *See*—
Van Loan, Paul R., 3,868,334.

Aisin Seiki Kabushiki Kaisha: *See*—
Yokoi, Masatada, 3,868,001
Yokoi, Masatada, 3,868,001.

Ajinomoto Co., Inc.: *See*—
Tamura, Fumihide; Ozawa, Yoichi; and Nakamura, Asao, 3,868,394.

Akanuma, Kaneo: *See*—
Yamamoto, Takaaki; Akanuma, Kaneo; and Tanaka, Osamu, 3,868,280.

Akitsuki, Ikuo: *See*—
Itoh, Takuji; Akitsuki, Ikuo; Miura, Tadashi; and Kubota, Kohei, 3,868,317.

Akkerman, James William. Animal feeder. 3,867,904, Cl. 119-51.00R.

Akwell Industries Incorporated: *See*—
Povlacs, Lawrence J., 3,867,727.

Akzona Incorporated: *See*—
Hurenkamp, Bernard, 3,868,219.

Alaimo, Robert J.: *See*—
Spencer, Claude F.; and Alaimo, Robert J., 3,868,378.

Albright, Jay Donald; Riggi, Stephen Joseph; and Shepherd, Robert Gordon, to American Cyanamid Company. Hypolipidemic 4-(monoalkylamino)benzoic acid derivatives. 3,868,416, Cl. 260-518.00R.

Alcyon Electronique et Physique S.A.: *See*—
Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, 3,868,490.

Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H. Half amide-half ammonium slats or alpha-olefin-maleic anhydride copolymers. 3,868,353, Cl. 260-78.0UA.

Allied Chemical Corporation: *See*—
Lawwill, Ronald C., 3,868,627.
Radke, Donald G.; and Lewis, Donald J., 3,868,126.

Allin, George S., Jr.: *See*—
Greenlay, Roy; and Allin, George S., Jr., 3,868,022.

Allison, Kenneth C. Electrical connector. 3,868,475, Cl. 174-87.000.

Aluminum Company of America: *See*—
Fish, William M., 3,868,442.

Amana Refrigeration, Inc.: *See*—
Bourgeois, Joseph F., 3,867,880.

Ambatis, Maris: *See*—
Miles, John R.; and Miles, Grant M., 3,868,173.

Ameigh, Robert Larry. Integral hydraulic tensioning assembly. 3,867,895, Cl. 114-109.000.

Amerace Corporation: *See*—
Lisk, Timothy A., 3,868,164.
Trimmer, Paul A.; and Cirule, Fred M., 3,868,483.

American Cyanamid Company: *See*—
Albright, Jay Donald; Riggi, Stephen Joseph; and Shepherd, Robert Gordon, 3,868,416.
Gastrock, William Henry, 3,868,385.

American Optical Corporation: *See*—
De Veer, Johannes D., 3,868,168.
Shoemaker, Arthur H., 3,868,175.

Ametek, Inc.: *See*—
Widlund, Charles R., 3,867,841.

Ammon, John Preston, to Elfab Corporation. Electrical connector. 3,868,162, Cl. 339-17.00M.

Ammon, John Preston, to Elfab Corporation. Printed circuit board connector having contacts arranged in a staggered grid array. 3,868,166, Cl. 339-176.0MP.

AMP Incorporated: *See*—
Dola, Frank Peter, 3,868,618.
Frantz, Robert Houston, 3,868,161.
Koch, Robert Milton; and Wion, Donald Andrew, 3,867,754.
Schulz, William J., 3,868,069.

Amsted-Siemag Kette GmbH: *See*—
Janzen, Wolfgang; and Bald, Alfred, 3,868,011.

Anaconda Company, The: *See*—
Goodzey, John R.; and Johnson, Robin L., 3,868,070.
Johnson, Daniel B., 3,867,758.
Lindblad, Kenneth O.; and Dufresne, Ralph E., 3,868,440.

Analogy Devices, Inc.: *See*—
Krabbe, Heinrich F., 3,868,583.

Anderson, David K., to United States of America, Army. Modular binocular eyepiece for thermal image systems. 3,868,504, Cl. 250-213.0VT.

Anderson, Fred A.; and Newton, Robert F., to Cincinnati Milacron-Heald Corporation. Coolant system for machine tool. 3,868,195, Cl. 408-61.000.

Anderson, James W.: *See*—
Joyner, Bobby L.; Yearick, Betty L.; Kaiser, Harold S.; and Anderson, James W., 3,867,929.

Anderson, Jon A.: *See*—
Schwalm, Arthur W.; and Anderson, Jon A., 3,867,949.

Andersson, Per Olof: *See*—
Tornmarck, Sven Ivan Arvid; and Andersson, Per Olof, 3,868,218.

Andover Medical Industries, Inc.: *See*—
West, Roland James, 3,867,923.

Antuma, Hendrikus Jan, to U.S. Philips Corporation. Device for converting a rotary movement into a symmetrical reciprocating movement. 3,867,845, Cl. 74-25.000.

Aoki, Takashi: *See*—
Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, 3,868,649.

Aqua-Chem, Inc.: *See*—
Haye, Paul G. La; and Bjerklie, John W., 3,868,211.

Aquila S.p.A.: *See*—
Giangaspero, Michele; Tlustos, Giorgio; Bose, Marino; and Corsi, Domenico, 3,868,430.

Arai, Michio, to Sony Corporation. A field effect transistor having a pair of gate regions. 3,868,718, Cl. 357-22.000.

Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, to Bridgestone Tire Company Limited. Oil fence having a limited flexibility. 3,867,817, Cl. 61-1.00F.

Aratani, Tadatoshi; and Nakamura, Shuzo, to Sumitomo Chemical Company, Ltd. Asymmetric synthesis of alkyl chrysanthemates. 3,868,401, Cl. 260-468.00H.

Arman, Dario. Connecting member for windshield wiper blade. 3,867,736, Cl. 15-250.320.

Arman, Dario. Molded plastic support for wiper blades of windscreen wiper equipment on motor vehicle. 3,867,737, Cl. 15-250.420.

Arneson, Harold N., to General Electric Company. Blood pressure amplifier with zero balancing means. 3,868,679, Cl. 340-347.0AD.

Arnold, Sieghard, to International Business Machines Corporation. Transport device for web material. 3,868,053, Cl. 226-173.000.

Arthur D. Little, Inc.: *See—*
Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., 3,868,104.

Arutjunian, Vladimir Semenovich; and Mirimanian, Vigen Khachaturovich. Synchronous electric machine. 3,868,564, Cl. 322-59.000.

Asagi, Yasuyoshi: *See—*
Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, 3,868,649.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Masahiro, 3,868,701.

Aseff, Taman M., Jr.: *See—*
Bellantoni, Frank A., deceased; and Tucciarone, John Walter, 3,867,942.

Ashfield Dyeing & Finishing Company Limited: *See—*
Shackleton, Alan Lomas, 3,868,214.

Ashida, Hitoshi; Yasaka, Kenichiro; Tanabe, Motosuke; and Yoshino, Yuuji. Spectrum analyzer. 3,868,568, Cl. 324-77.0CS.

Askew, Malcolm Anthony. Weighing apparatus for truck and vehicle loads. 3,867,990, Cl. 177-137.000.

Atchley, John Q.: *See—*
Morgan, Barrie O.; Branscome, Kenneth M.; Goode, George E.; and Atchley, John Q., 3,868,631.

Atha, Richard C.: *See—*
Lapham, James O.; and Atha, Richard C., 3,867,775.

Atlantic Research Corporation: *See—*
Fisher, Philip D.; and Sargent, William H., 3,868,125.

Atomic Energy of Canada Limited: *See—*
Bigham, Clifford B.; and Schneider, Harvey R., 3,868,522.

Austin, George Alfred Braisby. Fastenings for roof and wall sheeting. 3,867,742, Cl. 24-73.000.

Avco Corporation: *See—*
Krukonis, Val J., 3,868,230.

AVCO Everett Research Laboratory, Inc.: *See—*
Itzkan, Irving; and Caristi, Robert F., 3,868,590.

Avera, Charles W., to Electronic Data Controls Corp. Electrical game. 3,868,112, Cl. 273-94.00R.

Ayers, Clifton E., to P. R. Mallory & Co., Inc. Resistance welder. 3,868,489, Cl. 219-86.000.

Baatz, Wilfried, to FloScan Instrument Company, Inc. Axial outlet flow transducer. 3,867,840, Cl. 73-229.000.

Babka, Joseph A. Method for removing an orthopedic cast utilizing an embedded wire. 3,867,931, Cl. 128-91.00A.

Babled, Raymond. Brake members and shoes and shoe supports for such members, especially for two-wheeled vehicles. 3,868,002, Cl. 188-73.100.

Bachand, Ernest C.; and Grise, Frederick G. J., to Pioneer Coveralls. Adjustable truck cover. 3,868,142, Cl. 296-98.000.

Backhaus, Karl L.; and Tuschak, George, to Concast Incorporated. Roller apron for a continuous casting installation. 3,867,827, Cl. 72-251.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Bantel, Karl-Heinz; and Eilingsfeld, Heinz, 3,868,395.
Fischer, Adolf, 3,868,245.
Reuter, Peter; and Friedrichsen, Wilhelm, 3,868,393.

Bagdasarjanz, Felix; and Leuthold, Peter Eugen. Device for automatic equalisation. 3,868,576, Cl. 325-65.000.

Bahnsen, Gerhard I. W. Film holding structures for cameras. 3,868,707, Cl. 354-202.000.

Baisch, J. Carroll: *See—*
Grossman, Milton J., 3,868,037.

Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, to Boots Company Limited, The. Insecticidal compositions and methods of use for combating insects using substituted imidazoles. 3,868,458, Cl. 424-273.000.

Bald, Alfred: *See—*
Janzen, Wolfgang; and Bald, Alfred, 3,868,011.

Ballard, Allan. Pulsation reducer. 3,867,963, Cl. 138-46.000.

Banks, Donald S. Lamp flasher. 3,868,544, Cl. 315-200.00A.

Bantel, Karl-Heinz; and Eilingsfeld, Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of pure 1-nitroanthraquinone. 3,868,395, Cl. 260-369.000.

Banyas, John D.; and Ross, Edward A., to Owens-Illinois, Inc. Handling apparatus for a hollow glass article. 3,868,010, Cl. 198-179.000.

Barak, Amitzur Ze'ev; Weinberg, Joseph Michael; and Pachter, Moshe, to Israel Desalination Engineering (Zarchin Process) Ltd. Multieffect evaporator. 3,868,308, Cl. 202-174.000.

Barber-Colman Company: *See—*
Crandall, Charles B.; and Wieneke, Frederick L., 3,867,745.

Barbour, Roberto, to Cryton Optics, Inc. Light boxes with fresnel lenses. 3,868,501, Cl. 240-10.100.

Barrett, George M. Heat engine. 3,867,815, Cl. 60-682.000.

Barrett, George M. Low pollution reciprocating heat engine. 3,867,816, Cl. 60-682.000.

Barringer, Anthony Rene, to Barringer Research Limited. High resolution geochemical prospecting method and apparatus. 3,868,222, Cl. 23-230.0EP.

Barringer Research Limited: *See—*
Barringer, Anthony Rene, 3,868,222.

Bartenbach, Louis: *See—*
Fallon, William M.; Paris, Frank; and Bartenbach, Louis, 3,868,470.

Bartz, Kenneth W.; Higgins, John J.; Berejka, Anthony J.; and Di Cresce, Amerigo J., to Exxon Research and Engineering Company. Thermoplastic adhesive compositions. 3,868,433, Cl. 260-876.00R.

Basso, Michael J.; and Kronemberg, Stanley, to United States of America, Army. Dosimeter latch. 3,868,511, Cl. 250-376.000.

Battjes, Carl R., to Tektronix, Inc. Bootstrapped amplifier. 3,868,580, Cl. 330-18.000.

Bauer, Helmut; and Stanzel, Rudolf, to Messer Griesheim GmbH. Torch cutting apparatus. 3,868,095, Cl. 266-23.00K.

Baumer, Horst. Winding device for magnetic tapes. 3,868,066, Cl. 242-56.00A.

Baxter, Robert O., to International Paper Company. Dunnage bag. 3,868,026, Cl. 214-10.50D.

Bayer Aktiengesellschaft: *See—*
Becker, Hans-Joachim; Dierichs, Helmut; and Schmidt, Walter, 3,868,403.
Ley, Kurt; Seng, Florin; and Metzger, Karl George, 3,868,371.
Reiff, Helmut; Witt, Harro; and Dieterich, Dieter, 3,868,350.
Ulisch, Gunter; and Heinze, Gerhard, 3,868,299.
Zumach, Gerhard; Hammann, Ingeborg; Unterstenhofer, Gunter; and Wegler, Richard, 3,868,404.

BBC Brown, Boveri & Co.: *See—*
Nyffeler, Ernst; and Pfenicher, Peter, 3,867,869.

Beagan, Michael A., Jr. Feed traverse mechanism. 3,868,076, Cl. 248-16.000.

Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., to R. J. Reynolds Tobacco Company. Apparatus and method for manufacturing jet impingement type filters for smoking articles. 3,868,289, Cl. 156-443.000.

Beard, Lloyd R.: *See—*
Haubein, Harold Dennis; and Beard, Lloyd R., 3,868,615.

Beatrice Foods Company: *See—*
Gorychka, Carl; and Keyes, Richard M., 3,868,050.

Bechtel International Corporation: *See—*
Frey, Robert J., 3,867,954.

Bechtold, Bernd, to Berhard Forster, Firma. Shifting mechanism and watch. 3,867,850, Cl. 74-142.000.

Beck, Dieter; Bernasconi, Raymond; Schenker, Karl; and Wilhelm, Max, to Ciba-Geigy Corporation. 9-(3 Oxo-1-propenyl)-9,10-ethano-anthracenes. 3,868,421, Cl. 260-599.000.

Becker, Hans-Joachim; Dierichs, Helmut; and Schmidt, Walter, to Bayer Aktiengesellschaft. Process for the production of halogen-substituted aromatic amines. 3,868,403, Cl. 260-471.00R.

Becton, Dickinson and Company: *See—*
Owl, Laurance J.; Cody, Jimmy H.; and Kelley, Bill, 3,867,726.

Beecham Group Limited: *See—*
Brain, Edward George; Hanson, John Christopher; and Mehta, Minoo Dossabhoy, 3,868,405.

Beeren, Aloysius Jacobus Maria; and Stoffelen, Henricus Karel Jozef, to U.S. Philips Corporation. Luminaire. 3,868,502, Cl. 240-44.100.

Beisch, Hans R., to Norris Industries, Inc. Wheel trim. 3,868,147, Cl. 301-37.00C.

Beitchman, Burton David: *See—*
Holland, Dewey George; and Beitchman, Burton David, 3,868,408.

Bell Canada-Northern Electric Research Limited: *See—*
Pighin, Albert; Creswell, Robert Alvin; and Malanka, Douglas Peter, 3,868,534.

Bell, Larry E. Boat guide device. 3,868,030, Cl. 214-84.000.

Bell Telephone Laboratories, Incorporated: *See—*
Bonyhard, Peter Istvan; Chen, Yu-Ssu; and Smith, James Lanson, 3,868,661.
Howard, John Benedict; and Westover, Robert Franklin, 3,868,221.
Korb, Harold Wilfred, 3,868,586.

Bellantoni, Clare, administratrix: *See—*
Bellantoni, Frank A., deceased; and Tucciarone, John Walter, 3,867,942.

Bellantoni, Frank A., deceased (by Bellantoni, Clare, administratrix); and Tucciarone, John Walter, to Aseff, Taman M., Jr.; and Tucciarone, John Walter, part interest to each. Motor-operated multiple hair transplant cutter tool. 3,867,942, Cl. 128-305.000.

Beloit Corporation: *See—*
Sokolow, Nickolas N., 3,868,093.

Belyankin, Vitaly Alexandrovich: *See—*
Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich, 3,867,741.

Bendler, Hellmut: *See—*
Gawlick, Heinz; Bendler, Hellmut; and Brede, Uwe, 3,867,885.

Bennett, Robert R.: *See—*
Byerley, Wilbur M.; and Bennett, Robert R., 3,867,908.

Benson, Gustav E.; and Taylor, Everett W., to Owens-Corning Fiberglas Corporation. Method of treating and collecting yarn. 3,867,746, Cl. 28-72.0SP.

Bentley, Arch N., to Raymond Lee Organization, Inc., The. Book page holder. 3,868,085, Cl. 248-452.000.

Bentley, Gustavus A., to Federal-Mogul Corporation. Bidirectional hydrodynamic shaft seal. 3,868,105, Cl. 277-134.000.

Benz, Gottlieb; and Matzinger, August. Welding tool for forming synthetic-resin packages. 3,868,291, Cl. 156-515.000.

Berejka, Anthony J.: *See*—
Bartz, Kenneth W.; Higgins, John J.; Berejka, Anthony J.; and Di Cresce, Amerigo J., 3,868,433.

Berg, Donald P.; Bochmann, Carl E.; and Brescia, Anthony J., to Rubbermaid Commercial Products, Inc. Food service storage vehicle. 3,868,123, Cl. 280-79.200.

Berg, Jeffrey H.; and Trumbetas, Jerome, to General Foods Corporation. Method of producing fast dissolving dipeptide sweetner for sweet/sour systems. 3,868,472, Cl. 426-342.000.

Berger, Leo; and Corraz, Alfred John, to Hoffmann-La Roche Inc. 1,2-,3,4-Tetrahydrocarbazole-2-carboxylic acids and their derivatives. 3,868,387, Cl. 260-315.000.

Berges, David Alan, to SmithKline Corporation. 3-Heterocyclicthiomethylcephalosporins. 3,868,369, Cl. 260-243.00C.

Bergman, Ruben Gustav, to Telefonaktiebolaget L M Ericsson. Memory device with standby memory elements. 3,868,646, Cl. 340-172.500.

Bergwerksverband GmbH: *See*—
Robock, Klaus; Teichert, Ullrich; and Munder, Paul Gerhard, 3,868,223.

Berhard Forster, Firma: *See*—
Bechtold, Bernd, 3,867,850.

Beringer, Monique: *See*—
Buchmann, Paul; and Beringer, Monique, 3,867,951.

Berlin, Alfred Anisimovich; Liogonky, Boris Izrailevich; and Zapadinsky, Isaakovich. Thermostable heterocyclic polymers of aromatized bis adducts of diels-alder reaction between maleic anhydride and bisfuranic compounds. 3,868,348, Cl. 260-47.0CP.

Bernasconi, Raymond: *See*—
Beck, Dieter; Bernasconi, Raymond; Schenker, Karl; and Wilhelm, Max, 3,868,421.

Berns, Gerhardus Johannus: *See*—
Van Tiel Cornelius Hendrikus Josephus; and Berns, Gerhardus Johannus, 3,868,077.

Bernshtein, Max Khatskelevich: *See*—
Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich, 3,867,741.

Bernstein, Harold: *See*—
Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, 3,868,719.

Bersano, Donald. Wine decanter. 3,868,047, Cl. 222-166.000.

Berz, Wolfgang. Dust filter. 3,868,237, Cl. 55-270.000.

Betz, Erich, to DLW Aktiengesellschaft. Press device for pressing liquid from a fibrous body. 3,867,749, Cl. 29-121.00R.

Beurrier, Henry Richard. Amplifier with input and output match. 3,868,584, Cl. 330-124.00R.

Biber, Conrad H., to Polaroid Corporation. Pneumatically reactive exposure control system. 3,868,712, Cl. 354-230.000.

Bigalke, Erhard, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine ignition control system. 3,867,916, Cl. 123-117.00R.

Bigham, Clifford B.; and Schneider, Harvey R., to Atomic Energy of Canada Limited. Superconducting cyclotron. 3,868,522, Cl. 313-62.000.

Billi, Agostino; and Palmieri, Angelo, to Carle & Montanari S.p.A. Transferring device. 3,868,009, Cl. 198-25.000.

Billottet, Henri: *See*—
Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri, 3,868,575.

Binnie, Alexander Joseph; Bowdell, Kenneth; and Clark, Philip James, to George Kent Limited. Interrogation of remote stations via automatic dialler. 3,868,640, Cl. 340-151.000.

Bjerklie, John W.: *See*—
Haye, Paul G. La; and Bjerklie, John W., 3,868,211.

Black, Gerall A.; and Straub, Edward C. Method and apparatus for removing oil from swimming pools. 3,868,319, Cl. 210-40.000.

Black, James Whyte; Durant, Graham John; Emmeti, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Method of inhibiting histamine activity with guanidine compounds. 3,868,457, Cl. 424-273.000.

Black, Robert R., Jr.: *See*—
Jamison, John W.; Black, Robert R., Jr.; and Denner, Roy E., 3,868,297.

Blackham, Angus U.; and Palmer, James L., to United States of America, Atomic Energy Commission. Technetium catalyst for hydrocarbon reforming. 3,868,333, Cl. 252-463.000.

Blanchard, David L., to Zenith Radio Corporation. Ferro-resonant high voltage system. 3,868,538, Cl. 315-411.000.

Blattner, Kurt, to MADAG Maschinen- und Apparatebau Dietikon AG. Method and apparatus for printing on workpieces with an outer surface having the form of a truncated cone. 3,867,881, Cl. 101-7.000.

Blattry, Hans; and Lindemann, Johann, to Paul Forkardt Kommanditgesellschaft. Chuck. 3,868,120, Cl. 279-123.000.

Blazek, Frank V.; and Vaughn, Thomas C., to Westinghouse Air Brake Company. Jointless coded track circuits for railroad signal systems. 3,868,075, Cl. 246-34.0CT.

Blewitt, Donald D., to Westinghouse Electric Corporation. Core construction for current-limiting fuse. 3,868,619, Cl. 337-295.000.

Blonder-Tongue Laboratories, Inc.: *See*—
Tongue, Ben H., 3,868,604.

Bloom Engineering Company, Inc.: *See*—
Hovis, James E., 3,868,094.

Board of Regents, University of Washington: *See*—
Ekstrom, Philip A., 3,868,567.

Bochmann, Carl E.: *See*—
Berg, Donald P.; Bochmann, Carl E.; and Brescia, Anthony J., 3,868,123.

Bock, Rudolf. Adjustable arrangement for bending of bars of reinforcing steel mats. 3,867,829, Cl. 72-321.000.

Bodenheimer, Bert A., to Sea-Land Service, Inc. Bulk cargo handling system. 3,868,042, Cl. 220-63.00R.

Boehm, Guenter J.: *See*—
Murgio, Joseph M.; Pincus, Lawrence J.; and Boehm, Guenter J., 3,868,480.

Boehringer Ingelheim G.m.b.H.: *See*—
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,868,460.

Boixen, Heinz: *See*—
Schlunke, Jurgen; and Boixen, Heinz, 3,867,879.

Bolton, Leslie John; and Hall, Brian, to Post Office, The. Power feed arrangement for communication systems. 3,868,484, Cl. 179-170.00J.

Bongers, Hendrikus-Johannes, to G. Siempelkamp & Co. Apparatus for curing elongate workpieces. 3,868,204, Cl. 425-338.000.

Bonyhard, Peter Istvan; Chen, Yu-Ssu; and Smith, James Lanson, to Bell Telephone Laboratories, Incorporated. Magnetic bubble passive replicator. 3,868,661, Cl. 340-174.0TF.

Boone, Garret J., Jr. Geometric building module. 3,868,295, Cl. 161-15.000.

Boothe, Jerry Emile; Martin, Fred David; and Sharpe, Andrew Jackson, Jr., to Calgon Corporation. Friction reducing compounds for use in hydraulic fracturing fluids. 3,868,328, Cl. 252-8.55C.

Boots Company Limited, The: *See*—
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.

Borbely, Ronald J.: *See*—
West, Roland James, 3,867,923.

Bose, Marino: *See*—
Giangaspero, Michele; Tlustos, Giorgio; Bose, Marino; and Corsi, Domenico, 3,868,430.

Boss, Karl Heinz, to Dravo Corporation. Pellet production process. 3,868,246, Cl. 75-3.000.

Bourgeois, Joseph F., to Amana Refrigeration, Inc. Trash compactor. 3,867,880, Cl. 100-226.000.

Bowdell, Kenneth: *See*—
Binnie, Alexander Joseph; Bowdell, Kenneth; and Clark, Philip James, 3,868,640.

Bowman, Harold L.: *See*—
Shah, Mahendra B.; Russell, Donald W.; and Bowman, Harold L., 3,868,635.

Bowman, William W.: *See*—
McBride, Lyle E., Jr.; Bowman, William W.; Stoeckler, Hans A.; Hanson, Harold A.; and Gibola, Joseph J., 3,868,620.

Boyd, Philip R.: *See*—
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., 3,867,757.

Brackmann, Warren A.; and Dicianni, Daniel, to Rothmans of Pall Mall Canada Limited. Cigarette filter feed. 3,868,013, Cl. 198-287.000.

Brain, Edward George; Hanson, John Christopher; and Mehta, Minoo Dossabhoy, to Beecham Group Limited. Naphthylene derivatives. 3,868,405, Cl. 260-473.00F.

Brandli, Ronald L., to Textron Inc. Shock absorbing suspension system for a snowmobile. 3,867,991, Cl. 180-5.00R.

Branscome, Kenneth M.: *See*—
Morgan, Barrie O.; Branscome, Kenneth M.; Goode, George E.; and Atchley, John Q., 3,868,631.

Bratchell, Robert Lyndon, to Concrete Industries (Monier) Limited. Concrete mould positioner. 3,868,025, Cl. 214-1.00R.

Bratchell, Robert Lyndon, to Concrete Industries (Monier) Limited. Concrete screed means for aligned moulds. 3,868,200, Cl. 425-64.000.

Braunschweig, Richard: *See*—
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.

Brede, Uwe: *See*—
Gawlick, Heinz; Bendler, Hellmut; and Brede, Uwe, 3,867,885.

Brescia, Anthony J.: *See*—
Berg, Donald P.; Bochmann, Carl E.; and Brescia, Anthony J., 3,868,123.

Bridgestone Tire Company Limited: *See*—
Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, 3,867,817.

Broadview Chemical Corporation: *See*—
Manaka, Kazuo, 3,868,409.

Brower, Bernard C.: *See*—
Lapine, Robert L.; and Brower, Bernard C., 3,867,740.

Brown, Dora. Traction band with integral fasteners. 3,867,930, Cl. 128-83.000.

Brown, John A., to Foster Wheeler Corporation. Slag prevention air slots in furnace sidewalls. 3,867,909, Cl. 122-235.00B.

Brown, Stuart Houston; and Crocker, Richard E., to Chevron Research Company. Grease composition. 3,868,329, Cl. 252-17.000.

Broyles, Johnny Lee, to Tripple "I" Products, Inc. Earth working machine protector. 3,868,035, Cl. 214-762.000.

Bruins, Roger C., to Steelcase Inc. Stationery tray. 3,868,020, Cl. 211-126.000.

Brumbaugh, Philip A., to International Business Machines Corporation. Printing station apparatus for a bank passbook type document. 3,868,008, Cl. 197-127.00R.

Brunt, Geoffrey Albert Kenyon: *See—*
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; Jones, Christopher Robin; and Adey, Anthony John, 3,867,918.

Bryan, Robert E.: *See—*
Spary, Wilburn W., 3,868,551.

Bryan, Thomas L.: *See—*
Spary, Wilburn W., 3,868,551.

Bucalo, Louis, to Microbyx Corporation. Internal blood collection. 3,867,924, Cl. 128-2.00F.

Buchmann, Paul; and Beringer, Monique. Tobacco substitute. 3,867,951, Cl. 131-2.000.

Buhne, Gerd, to Titan Verpackungs System GmbH. Method of applying strapping material to round packages or the like. 3,867,878, Cl. 100-2.000.

Buitelaar, Arnold A.: *See—*
Van De Kraats, Eduard J.; Buitelaar, Arnold A.; and Schreuder, Thomas, 3,868,231.

Bullivant, Kenneth W., to K-Tron Corporation. Conveyor memory system. 3,868,643, Cl. 340-172.500.

Bunten, Theodore M., to Repco Products Corporation. Terminal enclosure and extension therefor. 3,868,474, Cl. 174-38.000.

Burlington Industries, Inc.: *See—*
Pugh, Charles D., 3,868,496.

Burroughs Corporation: *See—*
Caras, Bernard, 3,868,526.
Hennessey, William Michael; and Wescott, Ronald Owen, 3,868,676.
Holz, George Ernest; and Ogle, James Alexander, 3,868,543.
Kupsky, George A., 3,868,535.
Meier, Markus B., 3,867,797.

Burton, Duane: *See—*
Garner, David L., 3,867,738.

Burtt, Richard S.: *See—*
West, Roland James, 3,867,923.

Buss, Dennis Darcy, to Texas Instruments Incorporat.d. Dispersion compensated circuitry for analog charged systems. 3,868,516, Cl. 307-221.00R.

Buttel, Helmut: *See—*
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.

Button, Roger E. Calibration of particle velocity measuring instrument. 3,867,835, Cl. 73-1.00D.

Buurman, Herman; and Romberg, Hendrik, to U.S. Philips Corporation. Method of glass charge shaping and forming into a glass article. 3,868,240, Cl. 65-127.000.

BWG Bergwerke-und Walzwerk Maschinenbau G.m.b.H.: *See—*
Noe, Oskar, 3,867,826.

Byerley, Wilbur M.; and Bennett, Robert R., to Westinghouse Electric Corporation. Cross flow baffle for a steam generator. 3,867,908, Cl. 122-32.000.

C.A.V. Limited: *See—*
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; Jones, Christopher Robin; and Adey, Anthony John, 3,867,918.

Caddy Corporation of America: *See—*
Rothschild, Henry, 3,868,087.

Cadillon, Michel. Apparatus for driving and releasing a support on which a band or filament of material is to be wound. 3,868,067, Cl. 242-68.200.

Caine, Harold A. Visual collision avoidance warning device. 3,868,629, Cl. 340-104.000.

Calcagno, Benedetto: *See—*
Montanari, Fernando; Calcagno, Benedetto; and Conti, Luciano, 3,868,423.

Calgon Corporation: *See—*
Boothe, Jerry Emile; Martin, Fred David; and Sharpe, Andrew Jackson, Jr., 3,868,328.
Faulkner, William Donald, 3,868,429.
Hollingshad, William Robert, 3,868,217.
Rudelick, John, 3,867,961.

Cambern, Lonnie Kenneth, to Vance Industries, Inc. High slip prime mover for pumpjack apparatus. 3,867,846, Cl. 74-41.000.

Campbell, Gerald A.; Cohen, Hyman L.; Ling, Hans G.; and Ponticello, Ignazio S., to Eastman Kodak Company. Photographic elements containing polymeric oxidants. 3,868,252, Cl. 96-3.000.

Canadian Patents and Development Limited: *See—*
Oldham, Keith B., 3,868,578.

Canon Kobushiki Kaisha: *See—*
Yakota, Hideo, 3,868,174.

Capps, Wallace A., Jr.; Groom, Lemuel D., III; Hartmann, Clinton S.; and Vollers, Howard G., Jr., to Texas Instruments Incorporated. RF oscillator frequency control utilizing surface wave delay lines. 3,868,595, Cl. 331-108.000.

Capsule Communications, Inc.: *See—*
Firmin, James H., 3,868,675.

Capuano, Louis M.: *See—*
Spear, Richard M.; and Capuano, Louis M., 3,868,000.

Caras, Bernard, to Burroughs Corporation. Display panel. 3,868,526, Cl. 313-188.000.

Carbolabs, Inc.: *See—*
Karabinos, Joseph V., 3,868,399.

Cardiac Pacemakers, Inc.: *See—*
Schwalm, Arthur W.; and Anderson, Jon A., 3,867,949.

Carey, John Gerard, to Imperial Chemical Industries Limited. Manufacture of 1,1-disubstituted-4,4 -bipyridylium. 3,868,381, Cl. 260-295.0AM.

Carie & Montanari S.p.A.: *See—*
Billi, Agostino; and Palmieri, Angelo, 3,868,009.

Caristi, Robert F.: *See—*
Itzkan, Irving; and Caristi, Robert F., 3,868,590.

Carney, Richard William James; and deStevens, George, to Ciba-Geigy Corporation. α-(Cyclic tert, aminophenyl)-aliphatic acids. 3,868,391, Cl. 260-326.410.

Caroleo, Steven J., to Emerson Electric Co. Methods of installing an elongated, flexible, electric heater into a material storage tank, and heater construction for the same. 3,868,493, Cl. 219-318.000.

Caron, Thomas E., to Sta-Tite Corporation. Variable frequency electric fence charging circuit. 3,868,545, Cl. 315-209.000.

Carrasse, Jean; and Desbrosses, Denise, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Air-conditioning method and apparatus with heat pump. 3,867,979, Cl. 165-29.000.

Carrier Corporation: *See—*
Traver, Darwin G., 3,867,980.

Carter, James L.; and Custead, Wayne G., to Exxon Research and Engineering Company. Massive nickel catalysts. 3,868,332, Cl. 252-452.000.

Carver, Edgar B.; and Sioui, Richard H., to Norton Company. Grinding wheel core. 3,868,233, Cl. 51-298.000.

Carveth, Peter C., to Quaker Oats Company, The. Food container. 3,868,017, Cl. 206-491.000.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, 3,868,377.

Cassens, Nicholas, Jr.; and Neely, Joseph E., to Kaiser Aluminum & Chemical Corporation. Refractory motor. 3,868,261, Cl. 106-59.000.

Castello, Eugene A.: *See—*
Passmore, Edmund M.; and Castello, Eugene A., 3,868,540.

Caterpillar Tractor Company: *See—*
Cobb, Delwin Earl; Fidler, Jerry Dale; Gutman, Nathan; Livesay, Richard Edward; and Stemler, Orrin Arthur, 3,868,145.

Celanese Corporation: *See—*
Horlenko, Theodore; Fisher, Gene J.; and Aguilo, Adolfo, 3,868,410.
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., 3,868,349.

Centro Sperimentale Metallurgico S.p.A.: *See—*
Ramacciotti, Aldo, 3,868,247.

Chalin, Manuel L. Method of dutching cocoa. 3,868,469, Cl. 426-262.000.

Champion Spark Plug Company: *See—*
Eaton, Carl J.; and Podiak, Richard S., 3,868,530.

Chang, Kern Konan: *See—*
Schwartzmann, Alfred; Mikenas, Vitas Anthony; Thomas, John Jerome; and Chang, Kern Konan, 3,868,588.

Charles, Robert G.: *See—*
Hickam, William M.; and Charles, Robert G., 3,868,059.

Chavez, Robert C. Credit card and indentity verification system. 3,868,057, Cl. 235-61.70B.

Chen, Yu-Ssu: *See—*
Bonyhard, Peter Istvan; Chen, Yu-Ssu; and Smith, James Lanson, 3,868,661.

Cherubini, Albert E. Foldable and storable enclosure. 3,868,155, Cl. 312-284.000.

Chevron Research Company: *See—*
Brown, Stuart Houston; and Crocker, Richard E., 3,868,329.
Hotten, Bruce W., 3,868,376.

Chicago Roller Skate Company: *See—*
Ware, Gordon K., 3,868,121.

Childers, Warren, to Graphic Arts Manufacturing Co., Inc. Exposure control system. 3,868,183, Cl. 355-68.000.

Chrysler Corporation: *See—*
McKenney, Henry F., 3,867,843.

Ciba-Geigy AG: *See—*
Marthaler, Max; and Frauchiger, Ulrich, 3,868,253.

Ciba-Geigy Corporation: *See—*
Beck, Dieter; Bernasconi, Raymond; Schenker, Karl; and Wilhelm, Max, 3,868,421.
Carney, Richard William James; and deStevens, George, 3,868,391.
Petitpierre, Jean-Claude; and Weis, Claus, 3,868,419.

Ciecior, Heinrich; and Kessler, Rolf E., to Singer Company, The. Underbed thread trimmer for chainstitch sewing machines. 3,867,892, Cl. 112-252.000.

Cincinnati Milacron-Heald Corporation: *See—*
Anderson, Fred A.; and Newton, Robert F., 3,868,195.
Hirvi, Henry E.; and Gloshinski, Leon J., 3,868,118.
Robillard, Edward G., 3,867,794.

Cirule, Fred M.: *See—*
Trimmer, Paul A.; and Cirule, Fred M., 3,868,483.

Cities Service Company: *See—*
Dotson, Anderson, Jr.; and Wadsworth, F. T., 3,868,388.
Maddalena, John, 3,868,046.

Clark Equipment Company: *See—*
Den Bleyker, Joseph R., 3,867,750.
Pennington, Harold W.; and Ward, William H., 3,868,192.

Clark, Norman Owen; and Windle, William, to English Clays Lovering, Pochin & Company Limited. Separation of fine solids with adsorbing bodies. 3,868,318, Cl. 209-9.000.

Clark, Philip James: *See—*
Binnie, Alexander Joseph; Bowdell, Kenneth; and Clark, Philip James, 3,868,640.

Clarke, John W., to Eli Lilly and Company. Carton double-wall base and container utilizing same. 3,868,014, Cl. 206-45.190.

Clements, Herbert Arthur; and Heybourne, Robert Howard, to S.S.S. Patents Limited. Synchronous self-shifting clutch. 3,868,004, Cl. 192-67.00A.

Cloutier, Joseph V. Cylindrical sleeve support structure for adjustment of web contacting surface of pick-up bar in a papermaking machine. 3,868,301, Cl. 162-358.000.

Coats Company, Inc., The: *See—*
Cunningham, Charles L.; and Holladay, Jimmie L., 3,868,062.

Cobb, Delwin Earl; Fidler, Jerry Dale; Gutman, Nathan; Livesay, Richard Edward; and Stemler, Orrin Arthur, to Caterpillar Tractor Company. Eccentric ring impacting mechanism for in-situ rock breakers. 3,868,145, Cl. 299-37.000.

Cockerill-Cugree-Providence S.A.: *See—*
Donckel, George H.; and Streel, Dominique Th.F.L.J.M., 3,868,106.

Cody, Jimmy H.: *See—*
Owl, Laurance J.; Cody, Jimmy H.; and Kelley, Bill, 3,867,726.

Cohen, Harvey M.: *See—*
Sioui, Richard H.; and Cohen, Harvey M., 3,868,232.

Cohen, Hyman L.: *See—*
Campbell, Gerald A.; Cohen, Hyman L.; Ling, Hans G.; and Ponticello, Ignazio S., 3,868,252.

Cohen, Leonard; Coulter, Philip B.; and Zeffert, Bernard M., to United States of America, Army. Thickened phosphorus esters. 3,868,446, Cl. 424-81.000.

Coherent Radiation: *See—*
Yarborough, J. Michael; and Hobart, James L., 3,868,592.

Colas, Jean Daniel, to International Business Machines Corporation. Line scanning system in an exchange center. 3,868,482, Cl. 179-18.0FF.

Colebrand Limited: *See—*
Tusch, Nicholas Norbert; Watson, Robert Ian; and Taylor, Jack, 3,868,268.

Colgate-Palmolive Company: *See—*
Fischer, Charles F., 3,868,208.

Collins, Paul W.: *See—*
Pappo, Raphael; and Collins, Paul W., 3,868,413.

Colombo, Gianni: *See—*
Zamarco, Gino; and Colombo, Gianni, 3,867,820.

Columbia Broadcasting System, Inc.: *See—*
Vennola, Jorma; and Korpijaako, Erkki Pekka, 3,867,863.

Columbus Bin Company, Inc., The: *See—*
Mills, Albert A., Jr.; and Koerner, Norman H., Sr., 3,868,238.

Comoustion Engineering Inc.: *See—*
Felice, Frank Thomas; Fisher, Robert Earl; and Jacobs, Louis John, 3,868,241.

Compagnie Francaise de Raffinage: *See—*
Waeselynck, Raymond Francois Maurice, 3,867,811.

Concast Incorporated: *See—*
Backhaus, Karl L.; and Tuschak, George, 3,867,827.
Johansson, Nils Erik; and Cygler, Michael, 3,867,978.

Conch International Methane Limited: *See—*
Tornay, Edmund George, 3,867,818.

Concrete Industries (Monier) Limited: *See—*
Bratchell, Robert Lyndon, 3,868,025.
Bratchell, Robert Lyndon, 3,868,200.

Condecor Incorporated: *See—*
Scheyer, Stuart R., 3,868,283.

Congleton, Wayne, to Dolco Packaging Corporation. Container. 3,868,054, Cl. 229-2.500.

Connell, Gordon Sidney; and Egan, Paul, to Formflo Limited. Sintered blanks. 3,867,751, Cl. 29-148.40R.

Conner, William R., Jr., to Stahl-Urban Company. Apparatus for sewing pieces of textile fabric or the like. 3,867,889, Cl. 112-121.110.

Connick, Francis G.: *See—*
Tompkin, Robert B.; and Connick, Francis G., 3,868,468.

Consortium fur Elecktrochemische Industrie GmbH: *See—*
Daxer, Hilmar; Dietz, Wolfgang; Herrmann, Hans; and Vogerl, Manfred, 3,868,435.

Contel Corporation: *See—*
Polson, Jerry H., 3,868,600.

Conti, Luciano: *See—*
Montanari, Fernando; Calcagno, Benedetto; and Conti, Luciano, 3,868,423.

Continental Can Company, Inc.: *See—*
Erlandson, Paul M.; and Merz, Edmund H., 3,868,206.

Contraves AG: *See—*
Guggenbuhl, Walter, 3,868,498.
Pfenninger, Heinz; and Strietzel, Waldemar, 3,868,169.

Coombs, Harold B. Shock absorbing trailer hitch. 3,868,098, Cl. 267-138.000.

Cooper Industries, Inc.: *See—*
Lawless, John, 3,867,853.

Cooper, Lawrence; Ii, Lawrence B.; and Shang, David C. T., to International Business Machines Corporation. Multi-layer ferroelectric optical memory system. 3,868,652, Cl. 340-173.0LM.

Copeland, Claude T., to Dow Chemical Company, The. Method for forming a consolidated gravel pack in a subterranean formation. 3,867,986, Cl. 166-276.000.

Corey, Joseph T., to Permclip Products Corporation. Fastener device. 3,867,743, Cl. 24-153.0BP.

Corning Glass Works: *See—*
DeLuca, Robert D., 3,868,170.
Kellberg, Howard E.; and Maynard, Dale F., 3,868,264.
Messing, Ralph A., 3,868,304.

Cornwell, Gerald M.; and Streeton, William M., Jr., to Raytheon Company. Stripline solid state microwave oscillator with half wavelength capacitive resonator. 3,868,594, Cl. 331-99.000.

Corraz, Alfred John: *See—*
Berger, Leo; and Corraz, Alfred John, 3,868,387.

Corsi, Domenico: *See—*
Giangaspero, Michele; Tlustos, Giorgio; Bose, Marino; and Corsi, Domenico, 3,868,430.

Coulter, Philip B.: *See—*
Cohen, Leonard; Coulter, Philip B.; and Zeffert, Bernard M., 3,868,446.

Coulter, Stanley M.; and Lombardi, Raymond P., to Dravo Corporation. Apparatus for reducing automobile bodies and other waste to usable scrap. 3,868,064, Cl. 241-186.400.

Courageux, Huguette Fernande Fery. Swimming flipper. 3,867,734, Cl. 9-309.000.

Cox, Robert G., to Aeroquip Corporation. Method and apparatus for changing lube oil. 3,867,999, Cl. 184-1.500.

Cox, Robert P., to Lummus Company, The. Process and apparatus for the dehydrogenation of alkylated aromatic hydrocarbons. 3,868,428, Cl. 260-669.00R.

Cozzolino, Henry; and Gastineau, Robert L., to United Aircraft Products, Inc. Pneumatic tire with embedded ring means. 3,867,973, Cl. 152-153.000.

Crandall, Charles B.; and Wieneke, Frederick L., to Barber-Colman Company. Method for drawing in warp threads. 3,867,745, Cl. 28-72.500.

Crandell, Ralph F.: *See—*
Garner, David L., 3,867,738.

Crank, George: *See—*
Szinai, Stephen S.; Crank, George; and Harding, David R. K., 3,868,384.

Creswell, Robert Alvin: *See—*
Pighin, Albert; Creswell, Robert Alvin; and Malanka, Douglas Peter, 3,868,534.

Crocker, Richard E.: *See—*
Brown, Stuart Houston; and Crocker, Richard E., 3,868,329.

Crockett, Aulton E. Emergency tire chain. 3,867,974, Cl. 152-213.00R.

Crouse, Clifford F.: *See—*
Frazier, John Earl; and Crouse, Clifford F., 3,868,031.

Cruz, Ramon C.; Light, Clyde L.; and Nelson, Donald J., to Kennecott Copper Corporation. Method of casting copper anodes using a preheated mold coating. 3,867,977, Cl. 164-72.000.

Cryton Optics, Inc.: *See—*
Barbour, Roberto, 3,868,501.

Cull, Jay A.; and Zimberg, Walter M., to Hooker Chemicals & Plastics Corporation. Process for preparation of chlorendic anhydride. 3,868,397, Cl. 260-346.600.

Cunningham, Charles L.; and Holladay, Jimmie L., to Coats Company, Inc., The. Tire shredding machine. 3,868,062, Cl. 241-36.000.

Curtis, Little P.; and Heller, Paul R., to Westinghouse Electric Corporation. Turbine-generator water-cooled rotor shaft liner restraint. 3,868,520, Cl. 310-61.000.

Custead, Wayne G.: *See—*
Carter, James L.; and Custead, Wayne G., 3,868,332.

Cutler, Norman W., Jr., to Polaroid Corporation. Processing film units in sheet form. 3,868,717, Cl. 354-340.000.

Cutter Laboratories, Inc.: *See—*
Stubstad, James A.; Urbaniak, James R.; and Kahn, Paul, 3,867,728.

Cygler, Michael: *See—*
Johansson, Nils Erik; and Cygler, Michael, 3,867,978.

D. H. Baldwin Company: *See—*
Jones, Edward M.; and Wayne, William C., Jr., 3,867,862.

Dacom, Inc.: *See—*
Katzman, Howard, 3,868,477.

Dahl, Norman C. Two-part, two-material fastening element. 3,867,865, Cl. 85-62.000.

Dahlquist, Emil F. Stove. 3,867,922, Cl. 126-274.000.

Daigle, Donald J.; Reeves, Wilson A.; and Drake, George L., Jr, to United States of America, Agriculture. Flame resistant organic textile through treatment with halogen containing soluble methylol phosphine adducts. 3,868,269, Cl. 117-136.000.

Daimler-Benz Aktiengesellschaft: *See—*
Schopf, Hans-Joachim, 3,867,852.

Dainichi Nihon Densen Kabushiki Kaisha: *See—*
Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, 3,868,436.

Daniels, Peter J. L.; and Weinstein, Jay, to Shering Corporation. Process for preparing 2-deroxy-3-desamino-2,3-epiminoaminoglycosides and intermediates useful therein. 3,868,360, Cl. 260-210.0AB.

Darby, Thomas Dillard: *See—*
Stein, Herman Hal; and Darby, Thomas Dillard, 3,868,451.

Darrow, John O. G., to Westinghouse Air Brake Company. Solid state bell ringing system. 3,868,683, Cl. 340-384.00R.

Datotek, Inc.: *See—*
Morgan, Barrie O.; Branscome, Kenneth M.; Goode, George E.; and Atchley, John Q., 3,868,631.

Davenport, James D.: *See—*
Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,868,244.

Davidsohn, Uryon S., to Motorola, Inc. Diffusion guarded metal-oxide-silicon field effect transistors. 3,868,721, Cl. 357-41.000.

Davis, Michael S. Speech therapy device. 3,867,770, Cl. 35-35.00R.

Davis, Stuart M.; and Tichendorf, Dennis R., to ESB Incorporated. Disposable gas measuring pipet. 3,868,224, Cl. 23-259.000.

Daxer, Hilmar; Dietz, Wolfgang; Herrmann, Hans; and Vogerl, Manfred, to Consortium fur Elecktrochemische Industrie GmbH. Process for making molded silicon bodies. 3,868,435, Cl. 264-1.000.

Decelles, George A.; and Larson, Violet M., to Pillsbury Company, The. Process for preparing clustered, mixed ready to eat cereal products. 3,868,471, Cl. 426-303.000.

De Fraeye, Dirk Jules Remi; and Mewissen, Jan Alfons Catharina, to U.S. Philips Corporation. Electric incandescent lamp and method of manufacturing same. 3,868,531, Cl. 313-318.000.

De Graaff, Philip Johan, to U.S. Philips Corporation. An integrated circuit lead structure. 3,868,725, Cl. 357-68.000.

Delahanty, John: *See—*
Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., 3,868,104.

Del Monte, Raffaele: *See—*
Faustini, Remo; Tardani, Angelo; and Del Monte, Raffaele, 3,868,456.

Delplanque, Jean; and Foursy, Jacques. Apparatus for automatically finding microdocuments on a film. 3,868,645, Cl. 340-172.500.

Delta Products, Inc.: *See—*
Schweitzer, John C.; and Tuttle, Terry E., 3,868,479.

DeLuca, Robert D., to Corning Glass Works. Method of removing entrapped gas and/or residual water from glass. 3,868,170, Cl. 350-96.0WG.

DeMaria, Walter J.: *See—*
Miles, John R.; and Miles, Grant M., 3,868,173.

Den Bleyker, Joseph R., to Clark Equipment Company. Machinery stop and method of installation. 3,867,750, Cl. 29-148.300.

Denner, Roy E.: *See—*
Jamison, John W.; Black, Robert R., Jr.; and Denner, Roy E., 3,868,297.

Dentsply Research and Development Corporation: *See—*
Gonser, Donald I., 3,868,513.

Derner, William J., to FMC Corporation. Roller bearing with tapered outer race ring. 3,868,151, Cl. 308-207.000.

Deryabkin, Viktor Ilich: *See—*
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stepanovich; and Deryabkin, Viktor Ilich, 3,867,831.

Desbrosses, Denise: *See—*
Carrasse, Jean; and Desbrosses, Denise, 3,867,979.

Desnoyers, Pierre: *See—*
Vincent, Michel; Remond, Georges; and Desnoyers, Pierre, 3,868,411.

deStevens, George: *See—*
Carney, Richard William James; and deStevens, George, 3,868,391.

Dettwiler, Heinz, to Hatebur Umformmaschinen AG. Forging press. 3,867,830, Cl. 72-361.000.

De Veer, Johannes D., to American Optical Corporation. Combination of birefringent elements for polarizing interferential systems. 3,868,168, Cl. 350-12.000.

De Vries, Gerhard Heinrich Friedrich; Hornman, Johannes Petrus; Kuster, Hendrik; and Van Esdonk, Johannes, to U.S. Philips Corporation. Gas discharge picture display panel. 3,868,527, Cl. 313-188.000.

De Wachter, Anna Maria: *See—*
Van Kamp, Harmen; and De Wachter, Anna Maria, 3,868,453.

Diamond, Julius, to William H. Rorer, Inc. Thiopseudouronium compounds for treating gastrointestinal hyperacidity and ulceration. 3,868,462, Cl. 424-326.000.

Dicianni, Daniel: *See—*
Brackmann, Warren A.; and Dicianni, Daniel, 3,868,013.

Di Cresce, Amerigo J.: *See—*
Bartz, Kenneth W.; Higgins, John J.; Berejka, Anthony J.; and Di Cresce, Amerigo J., 3,868,433.

Dierichs, Helmut: *See—*
Becker, Hans-Joachim; Dierichs, Helmut; and Schmidt, Walter, 3,868,403.

Dieterich, Dieter: *See—*
Reiff, Helmut; Witt, Harro; and Dieterich, Dieter, 3,868,350.

Dietz, Wolfgang: *See—*
Daxer, Hilmar; Dietz, Wolfgang; Herrmann, Hans; and Vogerl, Manfred, 3,868,435.

Dilley, Douglas M., to United States of America, Navy. Regenerative, synchronous, pulse phase demodulator. 3,868,579, Cl. 329-107.000.

Dimick, Royal H., to Teledyne Wah Chang Albany. Method and apparatus for monitoring the electrode support of an arc furnace. 3,868,473, Cl. 13-13.000.

Dimitracopoulos, Panayotis C. Audiovisual system. 3,868,178, Cl. 353-19.000.

Director of National Food Research Institute: *See—*
Tsumura, Nobuzo; Yanai, Shoji; and Ishikawa, Masako, 3,868,303.

Di Vallesella, Frazione: *See—*
Fedon, Vigilio; and Di Vallesella, Frazione, 3,868,438.

Dixon, Farris E., to General Electric Company. Refrigerator cabinet construction. 3,86,,152, Cl. 312-214.000.

DLW Aktiengesellschaft: *See—*
Betz, Erich, 3,867,749.

Dola, Frank Peter, to AMP Incorporated. Fuse holder having indicator means. 3,868,618, Cl. 337-206.000.

Dolch, Volker, to Scanner, Inc. Reading of contrasting data by means of continuously attempting to decode read signals. 3,868,634, Cl. 340-146.30D.

Dolco Packaging Corporation: *See—*
Congleton, Wayne, 3,868,054.

Dolfini, Joseph Edward; Slusarchyk, William A.; and Koster, William Henry. Method for preparing 6-substituted penicillins by replacement of oxygen containing groups. 3,868,365, Cl. 260-239.100.

Donckel, George H.; and Streel, Dominique Th.F.L.J.M., to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED; and Cockerill-Cugree-Providence S.A. Vacuum chamber seal. 3,868,106, Cl. 277-237.00R.

Dotson, Anderson, Jr.; and Wadsworth, F. T., to Cities Service Company. Flame-retardant composition. 3,868,388, Cl. 260-326.00N.

Doucette, Eugene F., to Owens-Illinois, Inc. Carrier applicator machine for bottles. 3,867,807, Cl. 53-48.000.

Douglas, Lawrence M., to Polaroid Corporation. Photographic apparatus with film reciprocating transport system. 3,868,709, Cl. 354-212.000.

Dow Chemical Company, The: *See—*
Copeland, Claude T., 3,867,986.
Frevel, Ludo K.; and Kressley, Leonard J., 3,868,444.
Johnson, John E., 3,868,141.

Dragon, James W.; and Sakats, Gerald, to S & C Electric Company. Latch coupled fuse and exhaust control device. 3,868,617, Cl. 337-203.000.

Drake, George L., Jr: *See—*
Daigle, Donald J.; Reeves, Wilson A.; and Drake, George L., Jr, 3,868,269.

Dravo Corporation: *See—*
Boss, Karl Heinz, 3,868,246.
Coulter, Stanley M.; and Lombardi, Raymond P., 3,868,064.

Drelicharz, Joseph A., to United States of America, Navy. Container handling spreader bar. 3,868,139, Cl. 294-81.0SF.

Dressler, John L., to Mead Corporation, The. Stimulation control apparatus for an ink jet recorder. 3,868,698, Cl. 346-75.000.

Driscoll, Michael M., to Westinghouse Electric Corporation. Q-multiplied crystal resonator for improved hf and vhf source stabilization. 3,868,606, Cl. 333-80.00T.

Drummond, Carl W.; and Weber, Donald L. License plate holder. 3,867,776, Cl. 40-209.000.

Dubin, Robert R.: *See—*
Will, Fritz G.; and Dubin, Robert R., 3,868,273.

Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz. Separation of acrylic acid from the reaction gases from propylene or acrolein oxidation. 3,868,417, Cl. 260-526.00N.

Duff, John Sweton, to Imperial Chemical Industries Limited; and Rock Fall Company Limited. Cavities with fluent material. 3,867,867, Cl. 86-20.00C.

Dufrene, Alex. Tubing plug. 3,867,984, Cl. 166-188.000.

Dufresne, Ralph E.: *See—*
Lindblad, Kenneth O.; and Dufresne, Ralph E., 3,868,440.

Dunmire, Howard L.; and Hacskaylo, Michael, to United States of America, Army. Aiming light and aiming light adapter for use on a weapon. 3,867,764, Cl. 33-241.000.

Dunn, Ted E.: *See—*
Goldman, Leman, Jr.; and Dunn, Ted E., 3,868,687.

du Pont de Nemours, E. I., and Company: *See—*
Meertens, Jan; and Merkx, Antonius H. J., 3,867,810.
Proffitt, Thomas Jefferson, Jr., 3,868,270.

Durant, Graham John: *See—*
Black, James Whyte; Durant, Graham John; Emmeti, John Colin; and Ganellin, Charon Robin, 3,868,457.

Durin, Michel, to Societe Anonyme Automobiles Citroen. Methods for the formation on a wall exposed to frictional forces and belonging to a light alloy element, of a wear-resistant composite coating metallic. 3,868,311, Cl. 204-33.000.

Dyer, Hugh E. T., to Firth Cleveland Limited. Electric hair drying device. 3,868,495, Cl. 219-368.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Gawlick, Heinz; Bendler, Hellmut; and Brede, Uwe, 3,867,885.

E. R. Squibb & Sons, Inc.: *See—*
Klinger, Harry, 3,868,220.
Yale, Harry Louis; and Petigara, Ramesh B., 3,868,374.

E. R. Wagner Manufacturing Company: *See—*
Schnuell, Henry A., 3,867,739.

Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, to Hoffmann-La Roche Inc. 1H-5-phenyl-1,4-benzodiazepines. 3,868,363, Cl. 260-239.0BD.

Eastman Kodak Company: *See—*
Campbell, Gerald A.; Cohen, Hyman L.; Ling, Hans G.; and Ponticello, Ignazio S., 3,868,252.
Greiller, Jack F., 3,867,901.
Hart, Wallace F.; Hagemeyer, Hugh J., Jr.; and Park, William R., 3,868,422.
Parsons, Theron E., III; and Sheme, Francis J., 3,868,338.

Eaton, Carl J.; and Podiak, Richard S., to Champion Spark Plug Company. Spark plug. 3,868,530, Cl. 313-141.000.

Edgar, William D.: *See—*
Sustarsic, John D.; Kinzler, Raymond C.; and Edgar, William D., 3,868,309.

Edward Weck & Company, Inc.: *See—*
Nordin, Harald, 3,867,943.

Egan, Paul: *See—*
Connell, Gordon Sidney; and Egan, Paul, 3,867,751.
Eilingsfeld, Heinz: *See—*
Bantel, Karl-Heinz; and Eilingsfeld, Heinz, 3,868,395.
Eisai Co., Ltd.,: *See—*
Ikekawa, Nobuo; Morisaki, Masuo; and Lightbourn, Julieta Rubio, 3,868,396.
Eisdorfer, Norman R.; Lesniak, John M.; and Lichstein, Bernard M., to Johnson & Johnson. Plied absorbent structures. 3,867,935, Cl. 128-156.000.
Ekstedt, Jan Erik: *See—*
Ryde, Emma Marta; and Ekstedt, Jan Erik, 3,868,445.
Ekstrom, Philip A., to Board of Regents, University of Washington. Measurement of ST depression of electrocardiograms. 3,868,567, Cl. 324-77.00A.
Electro Signal Lab, Inc.: *See—*
Marsocci, Angelo August, 3,868,184.
Electronic Data Controls Corp.: *See—*
Avera, Charles W., 3,868,112.
Electrovert Manufacturing Co. Ltd.: *See—*
Tardoskegyi, Louis V., 3,868,272.
Elektroschemelzwerk Kempten GmbH: *See—*
Kratel, Gunter; Stohr, Gunter; Vogt, Georg; and Hechtl, Wolfgang, 3,868,345.
Elfab Corporation: *See—*
Ammon, John Preston, 3,868,162.
Ammon, John Preston, 3,868,166.
Eli Lilly and Company: *See—*
Clarke, John W., 3,868,014.
Hackler, Ronald E., 3,868,383.
Hatfield, Lowell D., 3,868,368.
Jackson, Richard L., 3,868,358.
Johnson, Irving S., 3,868,454.
Kraay, Russell J.; and Farkas, Eugene, 3,868,452.
Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,868,244.
Elliott, Robert Gordon, to Gazelle Systems Ltd. Precast rain-screen wall. 3,867,800, Cl. 52-347.000.
Ellis, Stafford M., to Super-Cut, Inc. Pavement grooving machine. 3,868,146, Cl. 299-39.000.
Elser, Wolfgang: *See—*
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., 3,867,757.
Emerson Electric Co.: *See—*
Caroleo, Steven J., 3,868,493.
Emmeti, John Colin: *See—*
Black, James Whyte; Durant, Graham John; Emmeti, John Colin; and Ganellin, Charon Robin, 3,868,457.
Enck, Richard S., Jr., to Varian Associates. Image intensifier tube employing a microchannel electron multiplier. 3,868,536, Cl. 315-12.000.
Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R., 3,868,651.
Engelbach, Heinz: *See—*
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz, 3,868,417.
Engelhard Minerals & Chemicals Corporation: *See—*
Godfrey, Loren; and Vaithinathan, Krisnamurthy, 3,868,275.
Engelhardt, Albrecht: *See—*
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,868,460.
Engelsmann, Dieter: *See—*
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, 3,868,708.
English Clays Lovering Pochin & Company Limited: *See—*
Clark, Norman Owen; and Windle, William, 3,868,318.
Enneking, Heinz: *See—*
Zeyns, Johannes; and Enneking, Heinz, 3,867,917.
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., to United States of America, Army. Method of fabrication of a photon sensor. 3,867,757, Cl. 29-574.000.
Enoguchi, Yuji: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,868,181.
Envirex Inc.: *See—*
Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, 3,868,324.
Ercolano, Andrew. Producing an applique thermoplastic article. 3,868,288, Cl. 156-248.000.
Erlandson, Paul M.; and Merz, Edmund H., to Continental Can Company, Inc. Apparatus for manufacture of highly oriented polymeric containers. 3,868,206, Cl. 425-387.00B.
Ernst, Richard J.; and Rod, Trygve R., to Xerox Corporation. Labeling apparatus and un-metered gluing mechanism therefor. 3,868,292, Cl. 156-568.000.
Ersek, Robert A., to Med General, Inc. Expendable stethoscope. 3,867,925, Cl. 128-2.05S.
ESB Incorporated: *See—*
Davis, Stuart M.; and Tichendorf, Dennis R., 3,868,224.
Esclamadon, Christian, to Societe Nationale des Petroles d'Aquitaine. Method of killing nematodes using certain halomethyl oxathienes. 3,868,459, Cl. 424-276.000.
Espenshade, Marlin A.: *See—*
Hahn, Peter A.; Hartdegen, Frank J.; and Espenshade, Marlin A., 3,868,448.
Ethyl Corporation: *See—*
Agee, Robert B.; and Rodriguez, Manuel, 3,868,441.
Kleiman, Joseph P., 3,868,425.
Kleiman, Joseph P., 3,868,426.
Evans, Frank; Frey, Walter; Staeheli, Joerg; and Toth, Istvan, to Sandoz Ltd. Nuclear alkylation of anilins. 3,868,420, Cl. 260-578.000.
Even, Reed K.: *See—*
Nathan, Amos; and Even, Reed K., 3,868,587.
Evg Enlwick-lungs-u Verwertungsgesellschaft, Firma: *See—*
Ritter, Klaus; and Gott, Hans, 3,867,968.
Exxon Research and Engineering Company: *See—*
Bartz, Kenneth W.; Higgins, John J.; Berejka, Anthony J.; and Di Cresce, Amerigo J., 3,868,433.
Carter, James L.; and Custead, Wayne G., 3,868,332.
Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, 3,868,315.
Kroll, Wolfram R.; and Long, Robert B., 3,868,398.
Robson, Harry E., 3,868,316.
Ezra C. Lundahl Inc.: *See—*
Lundahl, Ezra Cordell, 3,868,032.
Faiferlick, Owen J. Die for use in playing dice games. 3,868,115, Cl. 273-146.000.
Fair Company: *See—*
Sanders, Guy J., 3,867,995.
Fairchild Camera and Instrument Corporation: *See—*
Perrino, Frank A., 3,868,724.
Fairchild Industries Inc.: *See—*
Zeenkov, Michael N., 3,868,478.
Falke, Reinhard, to Hewlett-Packard GmbH. Combined potentiometer and amplifier circuitry. 3,868,598, Cl. 330-130.000.
Fallon, William M.; Paris, Frank; and Bartenbach, Louis, to General Foods Corporation. Seasoning individually quick frozen vegetables. 3,868,470, Cl. 426-302.000.
Fancy, Robert D.: *See—*
Aaronson, Charles D.; Rendina, John F.; and Fancy, Robert D., 3,868,499.
Fariss, Robert H.; and Skibo, Andrew D., to Monsanto Company. Process for preparing a polyvinyl butyral composite interlayer for laminated safety glass. 3,868,286, Cl. 156-163.000.
Farkas, Eugene: *See—*
Kraay, Russell J.; and Farkas, Eugene, 3,868,452.
Farney, George K., to Varian Associates. Cross-field amplifier having a beam of electrons flowing through the interaction region orthogonally to microwave power flow. 3,868,539, Cl. 315-39.300.
Fasching, George E.; and Patton, George H., to United States of America, Interior. Method of stabilizing single channel analyzers. 3,868,509, Cl. 250-336.000.
Faulkner, William Donald, to Calgon Corporation. Separation of xylenes. 3,868,429, Cl. 260-674.0SA.
Faust, Carl H. Apparatus and method for distinguishing between energized and induced voltages on high voltage power lines. 3,868,569, Cl. 324-126.000.
Faustini, Remo; Tardani, Angelo; and Del Monte, Raffaele, to Societa' Farmaceutici Italia. Certain hydantoins having animal growth stimulating activity. 3,868,456, Cl. 424-273.000.
Federal-Mogul Corporation: *See—*
Bentley, Gustavus A., 3,868,105.
Fedon, Vigilio; and Di Vallesella, Frazione, to Salottica S.r.l. Method for processing spectacle frames. 3,868,438, €l. 264-156.000.
Fehrm, Albert G., to Symmons Industries, Inc. Washing machine water supply and drain fixture. 3,867,957, Cl. 137-360.000.
Feldman, Jacob Richard: *See—*
Furda, Ivan; Feldman, Jacob Richard; and Malizia, Donato, 3,868,465.
Feldman, Jay Richard: *See—*
Parsons, Charles Henry; and Feldman, Jay Richard, 3,868,566.
Felice, Frank Thomas; Fisher, Robert Earl; and Jacobs, Louis John, to Combustion Engineering Inc. Manufacture of fused cast refractory with streams of oxygen. 3,868,241, Cl. 65-134.000.
Fera, Jose. Apparatus for producing powered paraffin. 3,868,199, Cl. 425-10.000.
Ferguson, Edgar J.; Vonderheide, Harry J.; and Ferguson, John L., to Iowa Manufacturing Company. Expandable articulated tandem roller. 3,868,194, Cl. 404-126.000.
Ferguson Industries, Inc.: *See—*
MacDonald, Robert A., 3,868,243.
Ferguson, John L.: *See—*
Ferguson, Edgar J.; Vonderheide, Harry J.; and Ferguson, John L., 3,868,194.
Ferreri, Paul: *See—*
Mazzola, Louis R.; and Ferreri, Paul, 3,868,336.
Ferrieu, Gibert Marie Marcel; and Glasbergen, Johannes Wilhelmus, to Telecommunications Radioelectriques et Telephoniques T.R.T. Arrangement for the transmission of information signals by pulse code modulation. 3,868,574, Cl. 325-38.00B.
Ferris, Ray L.: *See—*
Marulic, Walter J.; and Ferris, Ray L., 3,868,127.
Fidler, Jerry Dale: *See—*
Cobb, Delwin Earl; Fidler, Jerry Dale; Gutman, Nathan; Livesay, Richard Edward; and Stemler, Orrin Arthur, 3,868,145.
Fielding, John O.: *See—*
Witting, Harald L.; and Fielding, John O., 3,868,242.
Filippazzi, Franco, to Honeywell Information Systems Italia. Three dimensional optical associative memory. 3,868,655, Cl. 340-173.0AM.
Finley, Robert K., Jr.: *See—*
Szpur, Roman; and Finley, Robert K., Jr., 3,868,016.

Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel Farhan, 3,868,354.

Firmin, James H., to Capsule Communications, Inc. Display system with combined dynamic and static display. 3,868,675, Cl. 340-334.000.

Firth Cleveland Limited: *See—*
Dyer, Hugh E. T., 3,868,495.

Fischell, Robert E., to Johns Hopkins University, The. Fixed rate rechargeable cardiac pacemaker. 3,867,950, Cl. 128-419.00P.

Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Selective herbicide mixtures of substituted phenoxyalkanoic compounds and 3-alkyl-2,1,3-benzothiazinone-(4)-2,2-dixides and processes. 3,868,245, Cl. 71-91.000.

Fischer, Charles F., to Colgate-Palmolive Company. Soap plodder nozzle plate assembly. 3,868,208, Cl. 425-467.000.

Fischer & Porter Company: *See—*
Herzl, Peter J., 3,867,839.

Fish, William M., to Aluminum Company of America. Alumina extraction. 3,868,442, Cl. 423-121.000.

Fisher, Gene J.: *See—*
Horlenko, Theodore; Fisher, Gene J.; and Aguilo, Adolfo, 3,868,410.

Fisher, Philip D.; and Sargent, William H., to Atlantic Research Corporation. Inflation system for vehicle crash bag. 3,8[illegible]8,125, Cl. 280-150.0AB.

Fisher, Robert Earl: *See—*
Felice, Frank Thomas; Fisher, Robert Earl; and Jacobs, Louis John, 3,868,241.

Fleshman, Roger L. Egg layer system. 3,867,903, Cl. 119-17.000.

Flexsteel Industries, Inc.: *See—*
Quakenbush, Howard M., 3,868,084.

FloScan Instrument Company, Inc.: *See—*
Baatz, Wilfried, 3,867,840.

FMC Corporation: *See—*
Derner, William J., 3,868,151.

Fogarty, Charles P. Orbital engine. 3,868,072, Cl. 244-1.0SS.

Fontanella, Ethel L., to General Electric Company. Metal-bonded cubic boron nitride crystal body. 3,868,234, Cl. 51-309.000.

Fontijn, Leendert Antonius: *See—*
Van Zuijlen, Peter; and Fontijn, Leendert Antonius, 3,868,541.

Food Control AB: *See—*
Tornmarck, Sven Ivan Arvid; and Andersson, Per Olof, 3,868,218.

Ford, Douglas M.; and Schluter, Richard C. Golf practice device. 3,868,116, Cl. 273-186.00C.

Ford Motor Company: *See—*
Grenier, Emile P.; and Muller, George H., 3,867,919.

Fordemwalt, James N.: *See—*
Hubar, Robert J.; Smith, Kent F.; Fordemwalt, James N.; and Hanson, John W., 3,868,274.

Formflo Limited: *See—*
Connell, Gordon Sidney; and Egan, Paul, 3,867,751.

Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, to Exxon Research and Engineering Company. Electronic measurement of end point of asphalt oxidation. 3,868,315, Cl. 208-6.000.

Foseco International Limited: *See—*
Neu, Max Gerhard, 3,868,248.

Foster, Anthony, to Koppers Company, Inc. Pole kiln and method for drying logs. 3,867,765, Cl. 34-13.800.

Foster Grant Co., Inc.: *See—*
Westphal, Richard C.; and Heinig, Paul, 3,868,434.

Foster, Karl; and Thornburg, Donald R., to Westinghouse Electric Corporation. Doubly oriented cobalt iron alloys. 3,868,278, Cl. 148-31.550.

Foster Wheeler Corporation: *See—*
Brown, John A., 3,867,909.

Foursy, Jacques: *See—*
Delplanque, Jean; and Foursy, Jacques, 3,868,645.

Fowler, Joe J. Golfer's practice mat. 3,868,109, Cl. 273-187.00A.

Frama A.G.: *See—*
Haug, Werner, 3,867,860.

Frank, Gunter: *See—*
Klopfer, Anton Martin; Garbe, Siegfried; Frank, Gunter; and Peterek, Manfred, 3,868,523.

Frank Wilh. GmbH: *See—*
Frank, Wilhelm, 3,867,790.

Frank, Wilhelm, to Frank Wilh. GmbH. Stay arrangement for a window or door of the turn-and-tilt type. 3,867,790, Cl. 49-381.000.

Franklin Electric Co., Inc.: *See—*
Schaefer, Edward J.; and Streater, August L., 3,868,549.

Franklin, William E.; Rowland, Stanley P.; and Madacsi, John P., to United States of America, Agriculture. Process fo making activated, recurable, durable-press fabrics and the product. 3,868,216, Cl. 8-182.000.

Frantz, Robert Houston, to AMP Incorporated. Electrical component. 3,868,161, Cl. 339-14.00R.

Franz, John E.; and Nufer, Hans L., to Monsanto Company. Carboxyalkyl esters of n-phosphonomethyl glycine. 3,868,407, Cl. 260-482.00R.

Franz, Raymond A., to Monsanto Company. Dehydrocoupling process. 3,868,427, Cl. 260-668.00C.

Franzen, Gustav, to Palitex Project-Company GmbH. Pneumatic yarn knotter mechanism. 3,868,133, Cl. 289-2.000.

Frauchiger, Ulrich: *See—*
Marthaler, Max; and Frauchiger, Ulrich, 3,868,253.

Frazier, John Earl; and Crouse, Clifford F., to Frazier-Simplex, Inc. Glass batch feeding method. 3,868,031, Cl. 214-152.000.

Frazier-Simplex, Inc.: *See—*
Frazier, John Earl; and Crouse, Clifford F., 3,868,031.

Freemyer, Howard R. No-spill hot cup lid. 3,868,043, Cl. 220-90.400.

Frevel, Ludo K.; and Kressley, Leonard J., to Dow Chemical Company, The. Process for the preparation of porous sodium bicarbonate. 3,868,444, Cl. 423-422.000.

Frey, Robert J., to Bechtel International Corporation. Corrosion inhibition in slurry pipelines operated by gravity. 3,867,954, Cl. 137-1.000.

Frey, Walter: *See—*
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz, 3,868,417.
Evans, Frank; Frey, Walter; Staeheli, Joerg; and Toth, Istvan, 3,868,420.

Frezza, Robert, to Samcoe Holding Corporation. Method of steam processing tubular knit fabric or the like. 3,868,215, Cl. 8-149.300.

Friedlander, Sidney Lee, to Sphygmetrics, Inc. Blood pressure measuring device utilizing sub-audible frequency for detection. 3,867,926, Cl. 128-2.050.

Friedrich Uhde GmbH: *See—*
Marsch, Hans-Dieter, 3,867,907.
Scheibler, Erich; and Volker, Hans-Joachim, 3,868,443.

Friedrichsen, Wilhelm: *See—*
Reuter, Peter; and Friedrichsen, Wilhelm, 3,868,393.

Friend, John William. Cargo sling and feed-through link therefor. 3,868,137, Cl. 294-74.000.

Frisco, Theodore E. Adjustable universal coupling. 3,868,119, Cl. 279-16.000.

Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich. Method of aerodynamic formation for a fibrous layer from fibers treated on a carding machine and apparatus for performing this method. 3,867,741, Cl. 19-106.00R.

Fryer, Rodney Ian; and Walser, Armin, to Hoffmann-La Roche Inc. Oxazolobenzodiazepines. 3,868,362, Cl. 260-239.30T.

Fryer, Rodney Ian: *See—*
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,868,363.

Fuji Photo Film Co., Ltd.: *See—*
Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, 3,868,256.

Fujii, Takeshi: *See—*
Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, 3,868,375.

Fujimura, Noboru. Cigarette holder structure. 3,867,952, Cl. 131-262.00B.

Fujitsu Limited: *See—*
Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, 3,868,649.

Fujiwara, Takao: *See—*
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,868,181.

Fukagawa, Miroshi: *See—*
Kitamura, Nobuo; and Fukagawa, Miroshi, 3,868,621.

Fukuda, Shuichi; and Miya, Masao, to Nippon Electric Company, Limited. Hollow-cathode laser tube. 3,868,593, Cl. 331-94.50D.

Fuller, William D.: *See—*
Sanchez, Robert A.; and Fuller, William D., 3,868,386.

Furda, Ivan; Feldman, Jacob Richard; and Malizia, Donato. Low calorie, cold water soluble quick set gelatin dessert. 3,868,465, Cl. 426-168.000.

Furlenmeier, Andre: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.

Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, to Hoffmann-La Roche Inc. Processes for the preparation of 5beta-H-6-keto steroids. 3,868,366, Cl. 260-239.55R.

Futaki, Kiyoshi: *See—*
Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, 3,868,257.

Fuwa, Masaru: *See—*
Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, 3,868,436.

Fux, Kamil, to Prometall Uznach AG. Apparatus for removal of settled or strained solids from surrounding liquid. 3,868,323, Cl. 210-154.000.

G. D. Searle & Co.: *See—*
Hsu, Charles; Jiu, James; and Mizuba, Seth Setsuo, 3,868,412.
Pappo, Raphael; and Collins, Paul W., 3,868,413.

G. Siempelkamp & Co.: *See—*
Bongers, Hendrikus-Johannes, 3,868,204.

Gabriel-Robez, Roland, to MKT-tehtaat Oy. Cheese kettle or equivalent. 3,868,092, Cl. 259-120.000.

GAF Corporation: *See—*
Garnish, Sidney George; and Islam, Rafiqul, 3,868,255.
Wemmers, Anton, 3,868,254.

Gagnebin, Charles L., III: *See—*
Miller, Herbert E.; and Gagnebin, Charles L., III, 3,868,690.

Galonska, Walter. Engine construction and operating method utilizing exhaust gas as a source of energy. 3,867,910, Cl. 123-8.130.

Ganellin, Charon Robin: *See—*
Black, James Whyte; Durant, Graham John; Emmeti, John Colin; and Ganellin, Charon Robin, 3,868,457.

Garbe, Siegfried: *See*—
Klopfer, Anton Martin; Garbe, Siegfried; Frank, Gunter; and Peterek, Manfred, 3,868,523.

Gardner, Christina B.; and Odelberg, Bruce A. Printing machine. 3,868,699, Cl. 354-12.000.

Gardner-Denver Company: *See*—
Hisey, Robert W.; and Mitchhart, Ray M., 3,867,989.

Gardner, Ronald D., to Pipe Line Development Company, The. Apparatus for plugging pipe. 3,867,964, Cl. 138-89.000.

Garner, David L., to Burton, Duane; Crandell, Ralph F.; and Polumbus, Gary M., part interest to each. Removable handle for beverage containing cans and method of mounting same. 3,867,738, Cl. 16-114.000.

Garnett, George William, to Imperial Chemical Industries Limited. Control of dust during handling of materials. 3,867,969, Cl. 141-59.000.

Garnish, Sidney George; and Islam, Rafiqul, to GAF Corporation. Diazonium salts and diazotype materials. 3,868,255, Cl. 96-91.00R.

Garrett Corporation, The: *See*—
Wickson, Arthur K., 3,868,552.

Gas Council, The: *See*—
Thompson, Brian Hoyle, 3,868,226.

Gast, Jurgen: *See*—
Genzel, Ludwig; and Gast, Jurgen, 3,868,185.

Gastineau, Robert L.: *See*—
Cozzolino, Henry; and Gastineau, Robert L., 3,867,973.

Gastrock, William Henry, to American Cyanamid Company. Preparation of 2-cyano-1-substituted-5-nitroimidazole. 3,868,385, Cl. 260-309.000.

Gathman, Albert: *See*—
Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, 3,868,315.

Gawlick, Heinz; Bendler, Hellmut; and Brede, Uwe, to Dynamit Nobel Aktiengesellschaft. Electrical primer. 3,867,885, Cl. 102-28.00R.

Gay, Philip James. Cathodic protection. 3,868,313, Cl. 204-196.000.

Gayle, Robert, to National Patent Development Corporation. Reflective markers. 3,868,294, Cl. 161-4.000.

Gazarov, Rudolf Ervandovich: *See*—
Ibragimov, Enver Seifullaevich; and Gazarov, Rudolf Ervandovich, 3,867,956.

Gazelle Systems Ltd.: *See*—
Elliott, Robert Gordon, 3,867,800.

Gazza, George E.; and Lindley, Michael W., to United States of America, Army. Method of making gradient ceramic-metal material. 3,868,267, Cl. 117-22.000.

GCA Corporation: *See*—
Aaronson, Charles D.; Rendina, John F.; and Fancy, Robert D., 3,868,499.

Gebr. Hofmann KG: *See*—
Gerresheim, Manfred, 3,867,838.

Geller, Myer, to United States of America, Navy. Monochromatic detector. 3,868,503, Cl. 250-213.00R.

General Dynamics Corporation: *See*—
Hulderman, Garry N., 3,868,607.

General Electric Company: *See*—
Arneson, Harold N., 3,868,679.
Dixon, Farris E., 3,868,152.
Fontanella, Ethel L., 3,868,234.
Hand, John D.; and Whitehouse, Wendell G., 3,868,351.
Henderson, David C.; and Maloney, Kenneth M., 3,868,266.
Kidd, Marshall C., 3,868,677.
Konrad, Charles Edward, 3,868,554.
Lake, William H.; and Thomasson, Gene I., 3,868,528.
Lown, Harold, 3,868,196.
McKeon, Thomas F., Jr.; and Meier, George D., 3,868,296.
McMillan, Stephen L., 3,868,005.
Prener, Jerome S.; and Lubowski, Stanley J., 3,868,512.
Smith, William E., 3,868,370.
Takekoshi, Tohru, 3,868,389.
Walsh, LaVerne E., 3,868,529.
Will, Fritz G.; and Dubin, Robert R., 3,868,273.
Witting, Harald L.; and Fielding, John O., 3,868,242.

General Foods Corporation: *See*—
Berg, Jeffrey H.; and Trumbetas, Jerome, 3,868,472.
Fallon, William M.; Paris, Frank; and Bartenbach, Louis, 3,868,470.

General Instrument Corporation: *See*—
Hubar, Robert J.; Smith, Kent F.; Fordemwalt, James N.; and Hanson, John W., 3,868,274.

General Signal Corporation: *See*—
Parsons, Charles Henry; and Feldman, Jay Richard, 3,868,566.

Genzel, Ludwig; and Gast, Jurgen, to Max-Planck-Gesellschaft zur Forderung der Wissenshaften e.V. Asymmetric michelson interferometer for solid state infra-red spectroscopy. 3,868,185, Cl. 356-106.00R.

George Kent Limited: *See*—
Binnie, Alexander Joseph; Bowdell, Kenneth; and Clark, Philip James, 3,868,640.

Gericke, Clarence H.; and Pierce, Richard H., to Philadelphia Quartz Company. Agglomerating fine alkali metal silicate particles to form hydrated, amorphous, granules. 3,868,227, Cl. 23-313.000.

Gerrard, Bruce. Beverage dispensing valve. 3,867,962, Cl. 137-635.000.

Gerresheim, Manfred, to Gebr. Hofmann KG. Instrument hub for the measurement of forces and/or moments. 3,867,838, Cl. 73-133.00R.

Giangaspero, Michele; Tlustos, Giorgio; Bose, Marino; and Corsi, Domenico, to Aquila S.p.A. Process for the separation of ethylbenzene from xylenes. 3,868,430, Cl. 260-674.00A.

Gibola, Joseph J.: *See*—
McBride, Lyle E., Jr.; Bowman, William W.; Stoeckler, Hans A.; Hanson, Harold A.; and Gibola, Joseph J., 3,868,620.

Gidwani, Ram N.: *See*—
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,259.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,260.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,339.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,340.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,432.

Gilbarco Aust. Ltd.: *See*—
Scott, Ian John; and Tessier, Froie Edwin, 3,867,955.

Gilbreath, Benjamin F.; and Yeh, Hou Leh, to Hunt Electronics Company. Light dimming system for controlling brightness and rate of change of brightness of lights. 3,868,546, Cl. 315-293.000.

Giraudon, Raymond, to Rhone-Poulenc S.A. Thiazolidine derivatives. 3,868,382, Cl. 260-306.70T.

Glasbergen, Johannes Wilhelmus: *See*—
Ferrieu, Gibert Marie Marcel; and Glasbergen, Johannes Wilhelmus, 3,868,574.

Glass, Marvin I.; and McKay, Robert S., to Marvin Glass & Associates. Projector, target and target blocking apparatus. 3,868,113, Cl. 273-101.000.

Glass, Marvin I.; and Schoenfield, Palmer J., to Marvin Glass & Associates. Camping set. 3,868,177, Cl. 350-301.000.

Glory Kogyo Kabushiki Kaisha: *See*—
Abe, Masahiro; and Terada, Hiroshi, 3,868,044.

Gloshinski, Leon J.: *See*—
Hirvi, Henry E.; and Gloshinski, Leon J., 3,868,118.

Goby, Stephen. Loading apparatus for railroad flat cars. 3,868,029, Cl. 214-77.00R.

Godfrey, Loren; and Vaithinathan, Krisnamurthy, to Engelhard Minerals & Chemicals Corporation. Manufacture of silver-cadmium oxide wire. 3,868,275, Cl. 148-6.300.

Goff, James R. Abrasive blasting machine. 3,867,791, Cl. 51-9.00R.

Goldman, Leman, Jr.; and Dunn, Ted E., to RCA Corporation. Time measuring system. 3,868,687, Cl. 343-13.00R.

Goldshine, Alan D.: *See*—
Forster, Eric O.; Goldshine, Alan D.; and Gathman, Albert, 3,868,315.

Gollinger, Wolfgang, to ITT Industries, Inc. Integrable quartz oscillator circuit employing field effect transistors. 3,868,597, Cl. 331-116.00R.

Gomes, Robert: *See*—
West, Roland James, 3,867,923.

Gonser, Donald I. Clamp for a passive electrode. 3,868,165, Cl. 339-97.00R.

Gonser, Donald I., to Dentsply Research and Development Corporation. Ultraviolet radiation projector. 3,868,513, Cl. 250-504.000.

Gonzalez, Cesar Fernandez Veraud. Nuts and locknuts helicoidally coupled in one single unit for tightening at a controlled torsion. 3,867,972, Cl. 151-15.000.

Goodacre, Cecil; and Leggett, Peter Alfred, to Lansing Bagnall Limited. Industrial lift trucks. 3,868,034, Cl. 214-730.000.

Goode, George E.: *See*—
Morgan, Barrie O.; Branscome, Kenneth M.; Goode, George E.; and Atchley, John Q., 3,868,631.

Goodzey, John R.; and Johnson, Robin L., to Anaconda Company, The. Heavy coil pay-off. 3,868,070, Cl. 242-129.000.

Goof, Sven Karl Lennart. Dripless plastic pour spout insert. 3,868,051, Cl. 222-571.000.

Gordon, Robert L., to International Paper Company. Container carrier. 3,868,140, Cl. 294-87.200.

Gorton Corporation, The: *See*—
Tsuchiya, Takuzo; Valentas, Kenneth J.; and Morse, Donald W., 3,867,858.

Gorychka, Carl; and Keyes, Richard M., to Beatrice Foods Company. Valve assembly for semi-frozen commodity. 3,868,050, Cl. 222-509.000.

Goser, Karl: *See*—
Stein, Karl-Ulrich; and Goser, Karl, 3,868,656.

Gott, Hans: *See*—
Ritter, Klaus; and Gott, Hans, 3,867,968.

Gough, Dick Valentine. Liquid separators. 3,868,321, Cl. 210-86.000.

Grabher, Gerhard, to Oehler AG. Multi-needle double chain-stitch quilting machine. 3,867,891, Cl. 112-166.000.

Grant, George: *See*—
West, Roland James, 3,867,923.

Graphic Arts Manufacturing Co., Inc.: *See*—
Childers, Warren, 3,868,183.

Green, Douglas. Data transmission systems and components therefor. 3,868,519, Cl. 307-270.000.

Greenblatt, Abe, to Tseng, Peter. Magnetically-controlled animated toy. 3,867,786, Cl. 46-236.000.

Greenlay, Roy; and Allin, George S., Jr., to Harnischfeger Corporation. Self-propelled heavy duty mobile crane. 3,868,022, Cl. 212-8.00R.

Gregory, Lawrence; Murphy, Lloyd; and Hagen, Donald H., to Hagen International Inc. Radially expansible sprocket with rotatable teeth segments. 3,867,851, Cl. 74-244.000.

Greiller, Jack F., to Eastman Kodak Company. Apparatus for production of photographic elements. 3,867,901, Cl. 118-50.000.

Greiner, Lawrence J. CB microphone-AM/FM radio control with AM-FM radio cut off switch and microphone holder. 3,868,571, Cl. 325-15.000.

Grenier, Emile P.; and Muller, George H., to Ford Motor Company. Anti-dieseling control. 3,867,919, Cl. 123-198.00D.

Grise, Frederick G. J.: *See—*
Bachand, Ernest C.; and Grise, Frederick G. J., 3,868,142.

Groner, Norman A., to Victor Comptometer Corporation. Archery arrow with shaft supporting arrow head assembly. 3,868,114, Cl. 273-106.50B.

Groom, Lemuel D., III: *See—*
Capps, Wallace A., Jr.; Groom, Lemuel D., III; Hartmann, Clinton S.; and Vollers, Howard G., Jr., 3,868,595.

Gros, Paul, to Society Superflexit. Vinylidene fluoride/hexafluoropropylene copolymer foams. 3,868,337, Cl. 260-2.50R.

Grosseau, Albert, to Societe Anonyme Automobile Citroen. Vehicle suspensions. 3,868,129, Cl. 280-106.50R.

Grossman, Milton J., to Baisch, J. Carroll, a part interest. Container and safety closure therefor. 3,868,037, Cl. 215-216.000.

Grundy, Reed H., to Westinghouse Air Brake Company. Fail-safe transistorized overspeed circuit arrangement. 3,868,548, Cl. 317-5.000.

GTE Sylvania Incorporated: *See—*
Passmore, Edmund M.; and Castello, Eugene A., 3,868,540.
Williams, G. Norman, 3,868,608.

Guggenbuhl, Walter, to Contraves AG. Method and apparatus for determining errors during counting of particles. 3,868,498, Cl. 235-151.300.

Guidoux, Loic Bernard Yves, to Telecommunications Radioelectriques et Telephoniques T.R.T. Automatic equalizing arrangement for a data transmission channel. 3,868,603, Cl. 333-18.000.

Gulf & Western Industries, Inc.: *See—*
Masher, Dale P., 3,868,626.

Gunderson, Ralph R. Adjustable deflector for snow removal machine. 3,867,773, Cl. 37-43.00R.

Gurevich, Vladimir Zakharovich: *See—*
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stepanovich; and Deryabkin, Viktor Ilich, 3,867,831.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Meier, Franz; Ossendorf, Erich; and Wolfgarten, Hubert, 3,868,236.

Gutman, Nathan: *See—*
Cobb, Delwin Earl; Fidler, Jerry Dale; Gutman, Nathan; Livesay, Richard Edward; and Stemler, Orrin Arthur, 3,868,145.

Hackler, Ronald E., to Eli Lilly and Company. Process for preparing 5-(α-cyanobenzylidene) oxazolidine-2, 4-diones. 3,868,383, Cl. 260-307.00B.

Hackler, Ronald E.: *See—*
Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,868,244.

Hacskaylo, Michael: *See—*
Dunmire, Howard L.; and Hacskaylo, Michael, 3,867,764.

Hadley, William Henry, to Metal Closures Limited. Closures for containers. 3,868,038, Cl. 215-305.000.

Haferl, Peter Eduard, to RCA Corporation. Amplifier which consumes a substantially constant current. 3,868,537, Cl. 315-389.000.

Haferl, Peter Eduard, to RCA Corporation. AF amplifier having constant current consumption. 3,868,582, Cl. 330-22.000.

Hagelin, Gunnar Johannes, to Telefonaktiebolaget L M Ericsson. Control system particularly for interlocking installations for railway operation. 3,868,641, Cl. 340-163.000.

Hagemeyer, Hugh J., Jr.: *See—*
Hart, Wallace F.; Hagemeyer, Hugh J., Jr.; and Park, William R., 3,868,422.

Hagen, Donald H.: *See—*
Gregory, Lawrence; Murphy, Lloyd; and Hagen, Donald H., 3,867,851.

Hagen International Inc.: *See—*
Gregory, Lawrence; Murphy, Lloyd; and Hagen, Donald H., 3,867,851.

Hahn, Peter A.; Hartdegen, Frank J.; and Espenshade, Marlin A., to W. R. Grace & Co. Method for bloat control. 3,868,448, Cl. 424-94.000.

Halasa, Adel Farhan, to Firestone Tire & Rubber Company, The. New catalyst for hydrogenation of elastomers and the process of hydrogenation. 3,868,354, Cl. 260-94.70H.

Hall, Brian: *See—*
Bolton, Leslie John; and Hall, Brian, 3,868,484.

Hamilton, Lillie; and McCrey, Lorretta. Method of stitching a corded seam. 3,867,890, Cl. 112-139.000.

Hamisch, Paul H., Sr., to Monarch Marking Systems, Inc. Selective drive connection for a cutting apparatus. 3,867,861, Cl. 83-571.000.

Hammann, Ingeborg: *See—*
Zumach, Gerhard; Hammann, Ingeborg; Unterstenhofer, Gunter; and Wegler, Richard, 3,868,404.

Hammer, Alvin N.: *See—*
Nachman, Joseph F.; and Hammer, Alvin N., 3,868,279.

Hand, John D.; and Whitehouse, Wendell G., to General Electric Company. Solution process for the preparation of polyimdies from diamines and anhydrides. 3,868,351, Cl. 260-78.0UA.

Hanson, Harold A.: *See—*
McBride, Lyle E., Jr.; Bowman, William W.; Stoeckler, Hans A.; Hanson, Harold A.; and Gibola, Joseph J., 3,868,620.

Hanson, James E., to Trend Development Corporation. Loom. 3,867,965, Cl. 139-33.000.

Hanson, John Christopher: *See—*
Brain, Edward George; Hanson, John Christopher; and Mehta, Minoo Dossabhoy, 3,868,405.

Hanson, John W.: *See—*
Hubar, Robert J.; Smith, Kent F.; Fordemwalt, James N.; and Hanson, John W., 3,868,274.

Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing an anti-virus substance for plants. 3,868,450, Cl. 424-115.000.

Harding, David R. K.: *See—*
Szinai, Stephen S.; Crank, George; and Harding, David R. K., 3,868,384.

Hardtmann, Goetz E., to Sandoz-Wander, Inc. Organomercapto-substituted polyhydro imidazo[1,5-a]pyridenes and pyride[1,2-c]pyrimidines. 3,868,372, Cl. 260-251.00A.

Harnischfeger Corporation: *See—*
Greenlay, Roy; and Allin, George S., Jr., 3,868,022.

Harry H. Bell & Sons, Inc.: *See—*
Lapine, Robert L.; and Brower, Bernard C., 3,867,740.

Hart, Wallace F.; Hagemeyer, Hugh J., Jr.; and Park, William R., to Eastman Kodak Company. Multistage hydroformylation process. 3,868,422, Cl. 260-604.0HF.

Hartdegen, Frank J.: *See—*
Hahn, Peter A.; Hartdegen, Frank J.; and Espenshade, Marlin A., 3,868,448.

Hartman, Jack; Leard, Joe W.; and Sharp, James L., to Porta-Kool, Inc. Refrigeration apparatus for cooling a liquid. 3,867,819, Cl. 62-293.000.

Hartmann, Clinton S.: *See—*
Capps, Wallace A., Jr.; Groom, Lemuel D., III; Hartmann, Clinton S.; and Vollers, Howard G., Jr., 3,868,595.

Hartwig, Karl; and Maurischat, Gunther, to Agfa-Gevaert Aktiengesellschaft. Method and arrangement for handling sheet goods, 3,868,666, Cl. 340-259.000.

Hashizume, Keisuke: *See—*
Itoh, Kiyoo; Shimohigashi, Katsuhiro; and Hashizume, Keisuke, 3,868,654.

Hatebur Umformmaschinen AG: *See—*
Dettwiler, Heinz, 3,867,830.

Hatfield, Lowell D., to Eli Lilly and Company. Process for preparing a 7-aminocephalosporin ester. 3,868,368, Cl. 260-243.00C.

Haubein, Harold Dennis; and Beard, Lloyd R. Current sensitive interrupting terminator assembly. 3,868,615, Cl. 337-169.000.

Haug, Werner, to Frama A.G. Device for cutting open letter envelopes. 3,867,860, Cl. 83-368.000.

Haye, Paul G. La; and Bjerklie, John W., to Aqua-Chem, Inc. Pollutant reduction with selective gas stack recirculation. 3,868,211, Cl. 431-10.000.

Hazan, Isaac, to Trissa Industries, Inc. Combination handbag and toy, container and figurine, or the like. 3,867,971, Cl. 150-28.00R.

Healey, Robert A.; and Shimp, Everett M., to International Business Machines Corporation. Stack mechanism for a data processor. 3,868,644, Cl. 340-172.500.

Heath, Robert Boyson, to Kangol Magnet Limited. Seat belt retractor. 3,868,068, Cl. 242-107.400.

Hechtl, Wolfgang: *See—*
Kratel, Gunter; Stohr, Gunter; Vogt, Georg; and Hechtl, Wolfgang, 3,868,345.

Hehl, Karl. Injector nozzle with shutoff valve for injection molding machine. 3,868,061, Cl. 239-571.000.

Heinig, Paul: *See—*
Westphal, Richard C.; and Heinig, Paul, 3,868,434.

Heinrich, Wilhelm. Separator panel holder for display shelves. 3,868,021, Cl. 211-184.000.

Heinze, Gerhard: *See—*
Ulisch, Gunter; and Heinze, Gerhard, 3,868,299.

Held, Gerhard R. Process for applying hard carbide particles upon a substrate. 3,868,235, Cl. 51-309.000.

Helke, Robert C., to La Mere Industries Inc. Incinerator. 3,867,729, Cl. 4-131.000.

Heller, Paul R.: *See—*
Curtis, Little P.; and Heller, Paul R., 3,868,520.

Henderson, David C.; and Maloney, Kenneth M., to General Electric Company. Alumina coatings for an electric lamp. 3,868,266, Cl. 117-18.000.

Hennessey, William Michael; and Wescott, Ronald Owen, to Burroughs Corporation. Display panel electrode termination. 3,868,676, Cl. 340-336.000.

Hergott, Patrick F. Tongue blade sucker. 3,867,927, Cl. 128-15.000.

Herrmann, Hans: *See—*
Daxer, Hilmar; Dietz, Wolfgang; Herrmann, Hans; and Vogerl, Manfred, 3,868,435.

Herrmann, Wolfgang Dieter; Stoss, Peter Johannes; and Saltzinger, Gerhard, to Warner-Lambert Company. Novel N-(ortho- and para-nitrobenzoyl)-sulfoximine intermediates and process for their production. 3,868,418, Cl. 260-558.00S.

Herzl, Peter J., to Fischer & Porter Company. Vortex-type flowmeter having strain gauge sensor in an elastic suspension. 3,867,839, Cl. 73-194.00B.

Hesselein, Robert J., to Lipe-Rollway Corporation. Machine noise reduction method. 3,867,875, Cl. 93-36.00M.

Hewlett-Packard GmbH: *See—*
Falke, Reinhard, 3,868,598.

Heybourne, Robert Howard: *See—*
Clements, Herbert Arthur; and Heybourne, Robert Howard, 3,868,004.

Hickam, William M.; and Charles, Robert G., to Westinghouse Electric Corporation. Magnetic bridge-type meter for magnetically permeable particulate matter. 3,868,059, Cl. 236-15.00E.

Hidaka, Hidemasa: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Hider, Shibley A.; Rogers, John K.; and Wilkins, Colbert W., to Owens-Illinois, Inc. Treatment of paper box plant effluents. 3,868,320, Cl. 210-53.000.

Higgins, John J.: *See—*
Bartz, Kenneth W.; Higgins, John J.; Berejka, Anthony J.; and Di Cresce, Amerigo J., 3,868,433.

High Voltage Engineering Corporation: *See—*
Merrill, Edward W., 3,868,346.

Hill, Maynard L., to Johns Hopkins University, The. Method and apparatus for attitude detection and stabilization of an airborne vehicle using the electrostatic field in the earth's atmosphere. 3,868,074, Cl. 244-77.00R.

Hill, William Frank; and Winkley, Albert William. Battery charging systems. 3,868,559, Cl. 320-61.000.

Hill, William Frank, to Lucas Electrical Company, The. Liquid level detecting circuits. 3,868,664, Cl. 340-244.00E.

Hinata, Masanao: *See—*
Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, 3,868,256.

Hiram Walker & Sons, Inc.: *See—*
Van Lanen, James M., deceased; Smith, Merritt B.; and Maisch, Weldon F., 3,868,307.

Hirano, Akira. Drawing instrument. 3,867,762, Cl. 33-77.000.

Hirasaki, Takashi; and Suga, Gojiro, to Rank Xerox, Ltd. Single sideband frequency modulation system. 3,868,599, Cl. 332-17.000.

Hirata, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Voltage regulator for generator. 3,868,563, Cl. 322-28.000.

Hirons, John L. Machine for forming indicia for sand blasting. 3,867,859, Cl. 83-284.000.

Hirvi, Henry E.; and Gloshinski, Leon J., to Cincinnati Milacron-Heald Corporation. Magnetic work holder. 3,868,118, Cl. 279-1.00M.

Hisey, Robert W.; and Mitchhart, Ray M., to Gardner-Denver Company. Pulldown mechanism for rotary drill apparatus. 3,867,989, Cl. 173-147.000.

Hitachi, Ltd.: *See—*
Hosoda, Taisei; Uzuhashi, Hideo; Kobayashi, Nobuyuki; and Tanaka, Masaaki, 3,867,960.
Itoh, Kiyoo; Shimohigashi, Katsuhiro; and Hashizume, Keisuke, 3,868,654.
Maki, Naoki, 3,867,886.
Tachibana, Keiji; Watanabe, Toru; and Tamura, Hisao, 3,867,752.

Hoare, Terrence Graham. Air intake device for internal combustion engines. 3,868,058, Cl. 236-13.000.

Hobart, James L.: *See—*
Yarborough, J. Michael; and Hobart, James L., 3,868,592.

Hocks, Peter: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.

Hoefling, Duane A. Extruded aluminum door frame. 3,867,801, Cl. 52-475.000.

Hofer, Dean A.: *See—*
Liu, Charles C.; and Hofer, Dean A., 3,868,689.

Hoffer, Max, to Hoffmann-La Roche Inc. 4-Amino-5-fluoro-2-tri(lower alkyl) silyloxypyrimidines. 3,868,373, Cl. 260-256.40E.

Hoffman, Charles Robert; and Kube, Donald H., to Motorola, Inc. Peripheral circuitry for dynamic MOS rams. 3,868,657, Cl. 340-173.00R.

Hoffman, David B. Portable winch. 3,868,091, Cl. 254-164.000.

Hoffman, Harry S., Jr., to International Business Machines Corporation. Capacitive voltage reducer. 3,868,560, Cl. 321-2.000.

Hoffmann-La Roche Inc.: *See—*
Berger, Leo; and Corraz, Alfred John, 3,868,387.
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,868,363.
Fryer, Rodney Ian; and Walser, Armin, 3,868,362.
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.
Hoffer, Max, 3,868,373.

Hoffmann, Walter: *See—*
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.

Hogan, Bernard E., Sr.; and Hogan, John P. Tire retreading apparatus and method. 3,868,284, Cl. 156-96.000.

Hogan, John P.: *See—*
Hogan, Bernard E., Sr.; and Hogan, John P., 3,868,284.

Holbrook, John Adams, to Morgan Construction Company. Double twist wire stranding machine with removable creel assembly. 3,867,809, Cl. 57-58.520.

Holbrook, Legrand K., to Medical Development Corporation. Vacuum sealed fluid collection bottle. 3,868,039, Cl. 215-309.000.

Holcomb, Jack N.; and Sylten, Hans D., to Jack Holcomb. Shoulder holster communication device. 3,868,573, Cl. 325-16.000.

Holladay, Jimmie L.: *See—*
Cunningham, Charles L.; and Holladay, Jimmie L., 3,868,062.

Holland, Dewey George; and Beitchman, Burton David, to Air Products and Chemicals, Inc. Ethylenically unsaturated dicarboxylic acid esters of α, α-dihydroperfluoro alcohols. 3,868,408, Cl. 260-485.00F.

Hollingshad, William Robert, to Calgon Corporation. Corrosion inhibition. 3,868,217, Cl. 21-2.70A.

Holz, George Ernest; and Ogle, James Alexander, to Burroughs Corporation. Display panel. 3,868,543, Cl. 315-169.0TV.

Holzman, Lawrence B.: *See—*
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., 3,868,349.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Irimajiri, Shoichiro, 3,867,914.
Sakurai, Yoshitoshi; and Ohata, Satoru, 3,867,915.

Honeywell Information Systems Inc.: *See—*
Johnson, Robert B., 3,868,672.

Honeywell Information Systems Italia: *See—*
Filippazzi, Franco, 3,868,655.

Hong, Se J.; and Patel, Arvind M., to International Business Machines Corporation. Plural channel error correcting apparatus and methods. 3,868,632, Cl. 340-146.1AL.

Honsel-Werke AG: *See—*
Zimmermann, Paul, 3,868,250.

Hooker Chemicals & Plastics Corporation: *See—*
Cull, Jay A.; and Zimberg, Walter M., 3,868,397.
Shatz, Malcolm H.; and Leon, Edward, 3,868,276.

Hoppl, Josef K., to J. K. Hoppl Corporation. Surgical microscope. 3,868,171, Cl. 350-85.000.

Horecky, Stanley V.; and McDonough, Cletus, to Molex Products Company. Printed circuit board lead wire receptacle. 3,867,760, Cl. 29-628.000.

Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, to Mitsubishi Paper Mills, Ltd. Hardeners for photographic gelatin. 3,868,257, Cl. 96-111.000.

Horlenko, Theodore; Fisher, Gene J.; and Aguilo, Adolfo, to Celanese Corporation. Conversion of oligomeric acrylates to acrylate monomers. 3,868,410, Cl. 260-486.00R.

Hornman, Johannes Petrus: *See—*
De Vries, Gerhard Heinrich Friedrich; Hornman, Johannes Petrus; Kuster, Hendrik; and Van Esdonk, Johannes, 3,868,527.

Horster, Horst: *See—*
Kaver, Erhard; Schroder, Johann; and Horster, Horst, 3,868,159.

Horwath, Tibor G.: *See—*
Whitehouse, Harper John; and Horwath, Tibor G., 3,868,624.

Hosoda, Taisei; Uzuhashi, Hideo; Kobayashi, Nobuyuki; and Tanaka, Masaaki, to Hitachi, Ltd. Five-way reversing valve. 3,867,960, Cl. 137-625.600.

Hotten, Bruce W., to Chevron Research Company. Bis N,N piperazine phosphoramides and their preparation. 3,868,376, Cl. 260-268.00K.

Houghton, Norman F., to Philco-Ford Corporation. Method for forming articles from plastic sheet material. 3,868,437, Cl. 264-92.000.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. Spiro dibenzocycloheptene isoindoline. 3,868,390, Cl. 260-326.100.

Houston Engineering Research Corporation: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; and Schweppe, Joseph L., 3,867,882.

Hovis, James E., to Bloom Engineering Company, Inc. Furnace control systems. 3,868,094, Cl. 266-5.00T.

Howard, John Benedict; and Westover, Robert Franklin, to Bell Telephone Laboratories, Incorporated. Method and apparatus for degradation testing of stabilized polymers. 3,868,221, Cl. 23-230.00R.

Howard, William C., to Norton Company. Composite resinoid bonded abrasive wheels. 3,867,795, Cl. 51-209.00R.

Howell, George H., to Koehring Company. Twin sheet thermoformer. 3,868,209, Cl. 425-504.000.

Hsu, Charles; Jiu, James; and Mizuba, Seth Setsuo, to G. D. Searle & Co. 9,15-Dioxo-5-cis-prostenoic acid. 3,868,412, Cl. 260-514.00D.

Hubar, Robert J.; Smith, Kent F.; Fordemwalt, James N.; and Hanson, John W., to General Instrument Corporation. Method for fabricating MOS devices with a multiplicity of thresholds on a semiconductor substrate. 3,868,274, Cl. 148-1.500.

Huddy, Robert A. Binasopharyngeal airway. 3,867,946, Cl. 128-351.000.

Huene, Donald R. Assembly for inserting rigid shafts into fractured bones. 3,867,932, Cl. 128-92.00E.

Huffman, James Earle. Apparatus for applying protective coating to picker sticks. 3,867,902, Cl. 118-423.000.

Hufford, Guy Darrell, Jr.; and Teets, John Leland, to Wilkinson Dental Manufacturing Co., Inc. Alloy for electrical leads. 3,868,249, Cl. 75-134.00N.

Hughes Aircraft Company: *See—*
Jamison, John W.; Black, Robert R., Jr.; and Denner, Roy E., 3,868,297.
Knauer, Wolfgang; and Lutz, Michael A., 3,868,550.

Hughes, Patrick L.: *See—*
Woodard, Roland L.; and Hughes, Patrick L., 3,868,692.

Hughes, Richard Smith, to United States of America, Navy. High speed video track loop. 3,868,688, Cl. 343-16.00M.

Hugoson, Birger O., to Westinghouse Electric Corporation. Spacer rings for a gas turbine rotor. 3,868,197, Cl. 415-199.00R.

Hulderman, Garry N., to General Dynamics Corporation. Doubly adjustable waveguide pin switch. 3,868,607, Cl. 333-98.00S.

Hunt Electronics Company: *See—*
Gilbreath, Benjamin F.; and Yeh, Hou Leh, 3,868,546.

Hunt, Philip A.: *See—*
Sykes, Donald J.; Papaconstantinou, Elias; and Murski, Kenneth, 3,868,485.
Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., to Arthur D. Little, Inc. Contactless fluid seal. 3,868,104, Cl. 277-30.000.
Hurenkamp, Bernard, to Akzona Incorporated. Determination of HCG glucose and galactose in body fluids with chromogenic indicators. 3,868,219, Cl. 23-230.00B.
Hurley, John L., to International Nickel Company, Inc., The. Decorative electroplates for plastics. 3,868,229, Cl. 29-195.000.
Hurwitz, Mathew. Transmissionless washing machine with modulated recirculation. 3,867,821, Cl. 68-184.000.
Hussain, Anwar A.; and Truelove, James E., to Interx Corporation. Ester of 3,4-dihydroxy-alpha (isopropylamino) methyl benzyl alcohol, composition and anti-asthma use thereof. 3,868,461, Cl. 424-311.000.
Hutchinson, Francis Gowland, to Imperial Chemical Industries Limited. Elastomer production. 3,868,431, Cl. 260-859.00R.
Huyck Corporation: *See—*
Wagner, Joseph Robert, 3,867,766.
Hyslop, Thomas, Jr. Guard rail support for scaffold. 3,867,997, Cl. 182-113.000.
Ibragimov, Enver Seifullaevich; and Gazarov, Rudolf Ervandovich. Safety valve. 3,867,956, Cl. 137-269.000.
Ichida, Taketoshi. Simulated viewing apparatus. 3,868,107, Cl. 272-18.000.
Ichioka, Satoshi: *See—*
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.
Idemitsu, Kosar Kabushiki-Kaisha (Idemitsu Kosan Co., Ltd.): *See—*
Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, 3,868,258.
Ii, Lawrence B.; and Shang, David C. T., to International Business Machines Corporation. Multi-layer ferroelectric apparatus. 3,868,172, Cl. 350-150.000.
Ii, Lawrence B.: *See—*
Cooper, Lawrence; Ii, Lawrence B.; and Shang, David C. T., 3,868,652.
Iizuka, Kozaburo, to J. Osawa & Co., Ltd. Collapsible and motorized cart. 3,867,993, Cl. 180-19.00R.
Ikekawa, Nobuo; Morisaki, Masuo; and Lightbourn, Julieta Rubio, to Eisai Co., Ltd.,. Preparation of 25-hydroxycholesterol and esters. 3,868,396, Cl. 260-397.200.
Illinois Tool Works, Inc.: *See—*
Knohl, Friedrich Karl, 3,867,864.
Imaoka, Yu: *See—*
Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, 3,868,101.
Imperial Chemical Industries Limited: *See—*
Carey, John Gerard, 3,868,381.
Duff, John Sweton, 3,867,867.
Garnett, George William, 3,867,969.
Hutchinson, Francis Gowland, 3,868,431.
Jamin, Guillaume Ward, 3,867,768.
Langrish-Smith, Michael Anthony; and Steele, Daniel, 3,867,884.
Rich, John Theodore, 3,868,352.
Industrial Dynamics, Inc.: *See—*
Levin, Herman, 3,868,648.
Information Design, Inc.: *See—*
Priest, Lyle Gilbert, 3,868,180.
Ingrain, Raymond: *See—*
Simon, Joseph; Ingrain, Raymond; and Jourdan, Charles, 3,868,682.
Innocenzi, Thomas E.: *See—*
Simpson, Samuel W.; and Innocenzi, Thomas E., 3,868,210.
Instronics Ltd.: *See—*
Knowles, John E., 3,868,555.
International Business Machines Corporation: *See—*
Arnold, Sieghard, 3,868,053.
Brumbaugh, Philip A., 3,868,008.
Colas, Jean Daniel, 3,868,482.
Cooper, Lawrence; Ii, Lawrence B.; and Shang, David C. T., 3,868,652.
Healey, Robert A.; and Shimp, Everett M., 3,868,644.
Hoffman, Harry S., Jr., 3,868,560.
Hong, Se J.; and Patel, Arvind M., 3,868,632.
Ii, Lawrence B.; and Shang, David C. T., 3,868,172.
Landman, Bernard S., 3,868,515.
Lechaton, John S.; Richard, Leo P.; and Smith, Daryl C., 3,868,723.
Morgan, Thomas Nolen, 3,868,281.
Poley, Neil M.; and Whitaker, Howard L., 3,868,271.
Snell, Spencer A., 3,868,045.
International Copper Research Association Inc.: *See—*
Nachman, Joseph F.; and Hammer, Alvin N., 3,868,279.
International Harvester Company: *See—*
Shore, Daniel B., 3,867,871.
International Nickel Company, Inc., The: *See—*
Hurley, John L., 3,868,229.
Suarez, Francis Sardovia; Mankins, William Lawrence; and Roberts, James Earl, 3,867,976.
International Paper Company: *See—*
Baxter, Robert O., 3,868,026.
Gordon, Robert L., 3,868,140.
International Standard Electric Corporation: *See—*
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.
Interx Corporation: *See—*
Hussain, Anwar A.; and Truelove, James E., 3,868,461.
Iowa Manufacturing Company: *See—*
Ferguson, Edgar J.; Vonderheide, Harry J.; and Ferguson, John L., 3,868,194.
Irimajiri, Shoichiro, to Honda Giken Kogyo Kabushiki Kaisha. Device for accelerating fuel vaporization in an internal combustion engine. 3,867,914, Cl. 123-75.00B.
Irvin Industries, Inc.: *See—*
Titcombe, Alan, 3,868,083.
Isaac, Earl J. Liquid supporting furniture. 3,867,731, Cl. 5-348.0WB.
Ise Electronics Corporation: *See—*
Tanji, Mikiharu, 3,868,542.
Isert, Ingo Rudiger: *See—*
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.
Ishikawa, Masako: *See—*
Tsumura, Nobuzo; Yanai, Shoji; and Ishikawa, Masako, 3,868,303.
Ishimaru, Toshiyasu; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. An improved process for producing penicillin compound. 3,868,364, Cl. 260-239.100.
Islam, Rafiqul: *See—*
Garnish, Sidney George; and Islam, Rafiqul, 3,868,255.
Isotec Incorporated: *See—*
Schlang, Arthur, 3,868,636.
Israel Desalination Engineering (Zarchin Process) Ltd.: *See—*
Barak, Amitzur Ze'ev; Weinberg, Joseph Michael; and Pachter, Moshe, 3,868,308.
Israelsson, Rolf B. E., to Svenska Dataregister AB. Handheld reading device. 3,868,514, Cl. 250-566.000.
Ito, Jiro: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.
Ito, Yoshimasa: *See—*
Onoda, Toshiaki; and Ito, Yoshimasa, 3,867,849.
Ito, Yoshinori; and Nakanishi, Mutsuo, to Sumitomo Metal Industries, Ltd. Submerged arc welding method and flux cored wire for use in same. 3,868,487, Cl. 219-73.000.
Ito, Yoshinori; Yamauchi, Nobuyuki; and Tanaka, Sadac, to Sumitomo Metal Industries, Ltd. Submerged arc welding method and flux cored wire for use in same. 3,868,491, Cl. 219-146.000.
Itoh, Kiyoo; Shimohigashi, Katsuhiro; and Hashizume, Keisuke, to Hitachi, Ltd. Memory cell with high threshold writing transistor. 3,868,654, Cl. 340-173.0CA.
Itoh, Takuji; Akitsuki, Ikuo; Miura, Tadashi; and Kubota, Kohei, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for conversion of hydrocarbons. 3,868,317, Cl. 208-139.000.
ITT Industries, Inc.: *See—*
Gollinger, Wolfgang, 3,868,597.
Itzkan, Irving; and Caristi, Robert F., to AVCO Everett Research Laboratory, Inc. Narrow bandwidth dye laser. 3,868,590, Cl. 331-94.50C.
J. I. Case Company: *See—*
Seaberg, David H., 3,867,987.
J. K. Hoppl Corporation: *See—*
Hoppl, Josef K., 3,868,171.
J. Osawa & Co., Ltd.: *See—*
Iizuka, Kozaburo, 3,867,993.
Jack Holcomb: *See—*
Holcomb, Jack N.; and Sylten, Hans D., 3,868,573.
Jackson, Richard L., to Eli Lilly and Company. Protamine-insulin product. 3,868,358, Cl. 260-112.700.
Jacobs, Louis John: *See—*
Felice, Frank Thomas; Fisher, Robert Earl; and Jacobs, Louis John, 3,868,241.
Jacobson, Benjamin D. Self-locking florist planter. 3,867,789, Cl. 47-41.120.
Jacobson, Larry A.; Wall, Warren B.; and Johnstone, Charles Wilkin, to Schlumberger Technology Corporation. Method and apparatus for investigating the quality of well logging data. 3,868,505, Cl. 250-269.000.
Jacobson, Roland A.; and Janes, Billy F., to Wickes Corporation, The. Powdered metal press. 3,868,201, Cl. 425-78.000.
Jamin, Guillaume Ward, to Imperial Chemical Industries Limited. Seal. 3,867,768, Cl. 34-242.000.
Jamison, John W.; Black, Robert R., Jr.; and Denner, Roy E., to Hughes Aircraft Company. A structural panel including a honeycomb core and a foamed polymer composition. 3,868,297, Cl. 161-68.000.
Janes, Billy F.: *See—*
Jacobson, Roland A.; and Janes, Billy F., 3,868,201.
Jansma, Roger H.: *See—*
Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H., 3,868,353.
Janzen, Wolfgang; and Bald, Alfred, to Amsted-Siemag Kette GmbH. Link conveyor. 3,868,011, Cl. 198-195.000.
Jarosek, Gordon G., to Lear Siegler, Inc. Bus bar. 3,868,163, Cl. 339-19.000.

Jidosha Kiki Co., Ltd.: *See*—
Shimoura, Yoshiyuki; Konishi, Hideo; and Sonoda, Hirotetsu, 3,867,870.
Jiu, James: *See*—
Hsu, Charles; Jiu, James; and Mizuba, Seth Setsuo, 3,868,412.
Johansson, Nils Erik; and Cygler, Michael, to Concast Incorporated. Method and apparatus for introduction of steel into a continuous casting mold. 3,867,978, Cl. 164-82.000.
Johns Hopkins University, The: *See*—
Fischell, Robert E., 3,867,950.
Hill, Maynard L., 3,868,074.
Johnson, Daniel B., to Anaconda Company, The. Method of making glass insulated electrical coils. 3,867,758, Cl. 29-605.000.
Johnson, George Howard. Tire changing tool. 3,867,975, Cl. 157-1.200.
Johnson, Irvin D., to Marathon Oil Company. Signal light-photo sensitive probe control system. 3,868,638, Cl. 340-147.00R.
Johnson, Irving S., to Eli Lilly and Company. Psoriasis treatment with mycophenolic acid derivatives. 3,868,454, Cl. 424-248.000.
Johnson, James T., to Olin Corporation. Inflating device for use with vehicle safety systems. 3,868,124, Cl. 280-150.0AB.
Johnson, John E., to Dow Chemical Company, The. Vehicular safety device. 3,868,141, Cl. 296-28.00R.
Johnson & Johnson: *See*—
Eisdorfer, Norman R.; Lesniak, John M.; and Lichstein, Bernard M., 3,867,935.
Mesek, Frederick K.; and Repke, Virginia L., 3,867,940.
Johnson, Leslie, to Westinghouse Electric Corporation. Leveling foot assembly for a laundry appliance. 3,868,079, Cl. 248-188.400.
Johnson, Phyllis, to Lawrence Peska Associates, Inc. Dog shower. 3,867,906, Cl. 119-158.000.
Johnson, Robert B., to Honeywell Information Systems Inc. Cathode ray tube control apparatus for displaying upper and lower case characters using a single matrix. 3,868,672, Cl. 340-324.0AD.
Johnson, Robin L.: *See*—
Goodzey, John R.; and Johnson, Robin L., 3,868,070.
Johnston, Mack S. Keg tapping device. 3,868,049, Cl. 222-400.700.
Johnstone, Charles Wilkin: *See*—
Jacobson, Larry A.; Wall, Warren B.; and Johnstone, Charles Wilkin, 3,868,505.
Jones, Bill J. Tennis racket grip. 3,868,110, Cl. 273-75.000.
Jones, Christopher Robin: *See*—
Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; Jones, Christopher Robin; and Adey, Anthony John, 3,867,918.
Jones, Edward M.; and Wayne, William C., Jr., to D. H. Baldwin Company. Electrical musical instrument. 3,867,862, Cl. 84-1.190.
Jones, Howard, to Merck & Co., Inc. Preparation of 5-fluoro-2-methyl-1-(p-methyl-sulfinylbenzylidene)-indenyl-3-acetic acid. 3,868,415, Cl. 260-515.00A.
Jones, Howard: *See*—
Shen, Tsung-Ying; and Jones, Howard, 3,868,414.
Jorgensen, Holger. Remote controlled gas cap lock. 3,868,134, Cl. 292-28.000.
Joseph, Alexander J., to Mathias Klein and Sons, Inc. Replaceable gaff climber. 3,867,998, Cl. 182-221.000.
Joshua Shaw & Sons Limited: *See*—
Smith, Kenneth, 3,868,003.
Jourdan, Charles: *See*—
Simon, Joseph; Ingrain, Raymond; and Jourdan, Charles, 3,868,682.
Joyner, Bobby L.; Yearick, Betty L.; Kaiser, Harold S.; and Anderson, James W., to Linden Laboratories, Inc. Ultrasonic treatment device and methods for using the same. 3,867,929, Cl. 128-66.000.
Junker, Erwin. Relief grinding attachment for screw tap grinding machines and polygon grinding. 3,867,793, Cl. 51-97.00R.
K-Tron Corporation: *See*—
Bullivant, Kenneth W., 3,868,643.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Shimizu, Tetsuji; and Kato, Tatsuo, 3,867,844.
Kadak, Eugene H. Conformal array beam forming network. 3,868,695, Cl. 343-778.000.
Kahn, Paul: *See*—
Stubstad, James A.; Urbaniak, James R.; and Kahn, Paul, 3,867,728.
Kaiser Aluminum & Chemical Corporation: *See*—
Cassens, Nicholas, Jr.; and Neely, Joseph E., 3,868,261.
Kaiser, Francis D. Power transformer having a spring-compressed winding structure. 3,868,612, Cl. 336-197.000.
Kaiser, Harold S.: *See*—
Joyner, Bobby L.; Yearick, Betty L.; Kaiser, Harold S.; and Anderson, James W., 3,867,929.
Kajima Kensetsu Kabushiki Kaisha: *See*—
Mikami, Yuzo; Kobayashi, Hideyuki; and Sasaki, Tetsuya, 3,867,805.
Kallenborn, Adolf. Infra red radiation means with fan means. 3,867,948, Cl. 128-395.000.
Kamibayashi, Tetsusaburo: *See*—
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.
Kaneda, Kazuhisa: *See*—
Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, 3,868,258.
Kangol Magnet Limited: *See*—
Heath, Robert Boyson, 3,868,068.
Kaplan, Lawrence R. Record cleaning mechanism. 3,868,117, Cl. 274-47.000.
Kappenhagen, George A.; and Tabor, James B., to Westinghouse Electric Corporation. Dipless cross fader with pile-on. 3,868,547, Cl. 315-296.000.
Karabinos, Joseph V., to Carbolabs, Inc. Chlorinated alkoxyphenylisocyanates. 3,868,399, Cl. 260-453.0AR.
Karl, Horst: *See*—
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, 3,868,708.
Katai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Control circuit for electronic shutter for electronic shutter having battery-checking circuit. 3,868,705, Cl. 354-51.000.
Kato, Fumio: *See*—
Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, 3,868,450.
Kato, Kenji: *See*—
Masuda, Yoshiro; Kato, Kenji; Takayama, Yoshihiro; Kida, Kenji; and Nakanishi, Meiseki, 3,868,305.
Kato, Tatsuo: *See*—
Shimizu, Tetsuji; and Kato, Tatsuo, 3,867,844.
Katzman, Howard, to Dacom, Inc. Facsimile system contrast enhancement. 3,868,477, Cl. 178-6.000.
Kaufman, Rubin P.; Rosenfeld, Jack B.; and Schiller, Elaine, to United States of America, Navy. Audio transmission and reception assembly. 3,868,572, Cl. 325-16.000.
Kaver, Erhard; Schroder, Johann; and Horster, Horst, to U.S. Philips Corporation. Method of manufacturing an electric incandescent lamp having a longer lifetime and/or a higher light output. 3,868,159, Cl. 316-1.000.
Kawaguchi, Yasuharu: *See*—
Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, 3,867,817.
Kawakami, Hiroshi: *See*—
Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, 3,867,817.
Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic flash control system for cameras. 3,868,701, Cl. 354-33.000.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., to Warner-Lambert Company. Denture adhesive preparation. 3,868,259, Cl. 106-35.000.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., to Warner-Lambert Company. Denture adhesive preparation. 3,868,260, Cl. 106-35.000.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., to Warner-Lambert Company. Denture adhesive preparation. 3,868,339, Cl. 260-17.00R.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., to Warner-Lambert Company. Denture adhesive preparation. 3,868,340, Cl. 260-17.4ST.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., to Warner-Lambert Company. Denture adhesive preparation. 3,868,432, Cl. 260-874.000.
Kellberg, Howard E.; and Maynard, Dale F., to Corning Glass Works. Method of applying light diffusing coating to interior of incandescent lamp envelope. 3,868,264, Cl. 117-10.000.
Kelley, Bill: *See*—
Owl, Laurance J.; Cody, Jimmy H.; and Kelley, Bill, 3,867,726.
Kelley, Donald Walter, to Shirley Aldred & Co. Ltd. Anaesthetic gas safety equipment. 3,867,936, Cl. 128-188.000.
Kennecott Copper Corporation: *See*—
Cruz, Ramon C.; Light, Clyde L.; and Nelson, Donald J., 3,867,977.
Moret, Bertus, 3,867,959.
Kennedy, Melvin R.: *See*—
Ryan, John W.; Kennedy, Melvin R.; and Marshall, James E., 3,867,785.
Kent, Francis J.; and Schmidt, Herbert, to Wean United, Inc. Apparatus for positioning the containers of an extrusion press. 3,867,828, Cl. 72-263.000.
Kerb, Ulrich: *See*—
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.
Keren, Eitan, to Sealed Air Corporation. Protective containers and methods of making the same. 3,868,056, Cl. 229-55.000.
Kerry, John C.: *See*—
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.
Kersman, Jorge Eduardo. Protective electric coupling. 3,868,160, Cl. 339-12.00R.
Kessler, Rolf E.: *See*—
Ciecior, Heinrich; and Kessler, Rolf E., 3,867,892.
Keyes, Richard M.: *See*—
Gorychka, Carl; and Keyes, Richard M., 3,868,050.
Keylwert, Johann, to Klockner-Humboldt-Deutz AG. Rotary piston internal combustion engine. 3,867,911, Cl. 123-8.150.
Khazhinsky, Jury Nikolaevich: *See*—
Shulika, Valery Petrovich; Khazhinsky, Jury Nikolaevich; Yakimenko, Jury Fedorovich; and Savchenko, Anatoly Vladimirovich, 3,868,213.
Kida, Kenji: *See*—
Masuda, Yoshiro; Kato, Kenji; Takayama, Yoshihiro; Kida, Kenji; and Nakanishi, Meiseki, 3,868,305.
Kidd, Archibald Watson. Forage harvesters. 3,867,808, Cl. 56-14.100.

Kidd, Marshall C., to General Electric Company. Phase-locked voltage-to-digital converter. 3,868,677, Cl. 340-347.0AD.

Kidd, Wayne L., to Xerox Corporation. Lamp assembly. 3,868,182, Cl. 355-67.000.

Kiemle, Horst, to Siemens Aktiengesellschaft. Device for optical superheterodyne information reading. 3,868,658, Cl. 340-173.0LT.

Kimberly-Clark Corporation: *See*—
Thomas, Gordon D., 3,868,205.

King, John O., Jr. Fastener assembly. 3,868,189, Cl. 403-12.000.

King, Lloyd H., Sr. Multiple pipe pulling device. 3,868,191, Cl. 403-216.000.

King, Myron L. Propulsion system for aircraft. 3,868,073, Cl. 244-34.00A.

Kinsley Corporation: *See*—
Kinsley, Lewis H., 3,868,012.

Kinsley, Lewis H., to Kinsley Corporation. Container orienting apparatus. 3,868,012, Cl. 198-276.000.

Kinzler, Raymond C.: *See*—
Sustarsic, John D.; Kinzler, Raymond C.; and Edgar, William D., 3,868,309.

Kirchner, Robert L. Athletic training device. 3,868,108, Cl. 273-1.50A.

Kirkpatrick, Robert E.: *See*—
Weaver, Curtis C.; and Kirkpatrick, Robert E., 3,868,149.

Kise, Katsuko. Picture frame. 3,867,774, Cl. 40-155.000.

Kitamura, Nobuo; and Fukagawa, Miroshi, to Sony Corporation. Variable resistor device. 3,868,621, Cl. 338-180.000.

Kitrilakis, Sotiris, to Tecna Corporation. Intrauterine device and process of making the same. 3,867,933, Cl. 128-129.000.

Kleiman, Joseph P., to Ethyl Corporation. Stabilized vinylidene bromide. 3,868,425, Cl. 260-652.50P.

Kleiman, Joseph P., to Ethyl Corporation. Stabilized vinylidene bromide. 3,868,426, Cl. 260-652.50P.

Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung: *See*—
Schlunke, Jurgen; and Boixen, Heinz, 3,867,879.

Kliment, Karel, to National Patent Development Corporation. Hema paste. 3,868,447, Cl. 424-81.000.

Klinger, Harry, to E. R. Squibb & Sons, Inc. Process for extracting procainamide from blood. 3,868,220, Cl. 23-230.00B.

Klockner-Humboldt-Deutz AG: *See*—
Keylwert, Johann, 3,867,911.

Klomp, Cornelis Johannes: *See*—
Van Osterhout, Gerard Willem; Lemmen, Vhendrikus Johannes; and Klomp, Cornelis Johannes, 3,867,900.

Klopfer, Anton Martin; Garbe, Siegfried; Frank, Gunter; and Peterek, Manfred, to U.S. Philips Corporation. Semitransparent photocathode. 3,868,523, Cl. 313-94.000.

Knauer, Wolfgang; and Lutz, Michael A., to Hughes Aircraft Company. Circuit breaker. 3,868,550, Cl. 317-11.00B.

Knize, Elmer J., to Lippy Can Co., Ltd. Can or container with resealable lid. 3,868,041, Cl. 220-55.0AN.

Knogo Corporation: *See*—
Minasy, Arthur J., 3,868,669.

Knohl, Friedrich Karl, to Illinois Tool Works, Inc. Anchor device. 3,867,864, Cl. 85-21.000.

Knoppe, Ulrich Von: *See*—
Stonner, Hans-Martin; Knoppe, Ulrich Von; Weisner, Paul; Kraus, Erhard; and Zigelsky, Fritz, 3,868,335.

Knott, Sydney T., to United States of America, Navy. Range rate compensation system. 3,868,622, Cl. 340-3.00R.

Knowles, John E., to Instronics Ltd. Line tracing apparatus. 3,868,555, Cl. 318-577.000.

Ko, Arthur Sai Chun: *See*—
Smyth, Derek George; and Ko, Arthur Sai Chun, 3,868,357.

Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, to Meiji Seika Kaisha, Ltd. Production of maltose with amylases produced by streptomyces. 3,868,464, Cl. 426-48.000.

Kobayashi, Hideo: *See*—
Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, 3,868,101.

Kobayashi, Hideyuki: *See*—
Mikami, Yuzo; Kobayashi, Hideyuki; and Sasaki, Tetsuya, 3,867,805.

Kobayashi, Nobuyuki: *See*—
Hosoda, Taisei; Uzuhashi, Hideo; Kobayashi, Nobuyuki; and Tanaka, Masaaki, 3,867,960.

Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, to Mishima Kiesan Co., Ltd. Device for connecting minute distributing circuit elements and minute connecting wire elements. 3,868,488, Cl. 219-85.000.

Koch, Hans Joachim; and Schaefer, Wolfgang, to Werkzeumaschinenfabrik Gildemeister & Comp. A.G. Arrangement for changing tool-supporting tool holders on a machine tool assembly. 3,867,756, Cl. 29-568.000.

Koch, Robert Milton; and Wion, Donald Andrew, to AMP Incorporated. Stripper crimper machine. 3,867,754, Cl. 29-203.0DS.

Kodama, Yutaka: *See*—
Ishimaru, Toshiyasu; and Kodama, Yutaka, 3,868,364.

Koehler, Heinrich P., to Rockwell International Corporation. Power tools. 3,867,988, Cl. 173-48.000.

Koehring Company: *See*—
Howell, George H., 3,868,209.

Koerner, Norman H., Sr.: *See*—
Mills, Albert A., Jr.; and Koerner, Norman H., Sr., 3,868,238.

Konishi, Hideo: *See*—
Shimoura, Yoshiyuki; Konishi, Hideo; and Sonoda, Hirotetsu, 3,867,870.

Konrad, Charles Edward, to General Electric Company. Current limit system for DC motor control. 3,868,554, Cl. 318-434.000.

Kopera, Joseph J., Jr. Electronic digital speedometer. 3,868,570, Cl. 324-166.000.

Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, to Boehringer Ingelheim G.m.b.H. Therapeutic compositions and method. 3,868,460, Cl. 424-304.000.

Koppers Company, Inc.: *See*—
Foster, Anthony, 3,867,765.
Sustarsic, John D.; Kinzler, Raymond C.; and Edgar, William D., 3,868,309.

Korb, Harold Wilfred, to Bell Telephone Laboratories, Incorporated. Differential amplifier having a short response time. 3,868,586, Cl. 330-30.00D.

Korpijaako, Erkki Pekka: *See*—
Vennola, Jorma; and Korpijaako, Erkki Pekka, 3,867,863.

Koster, William Henry: *See*—
Dolfini, Joseph Edward; Slusarchyk, William A.; and Koster, William Henry, 3,868,365.

Koury, Frederic: *See*—
Waymouth, John F.; and Koury, Frederic, 3,868,525.

Koyangi, Yukio, to Matsushita Electric Industrial Co., Ltd. Channel selector. 3,868,609, Cl. 334-11.000.

Kozlik, Antonin: *See*—
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.

Kraay, Russell J.; and Farkas, Eugene, to Eli Lilly and Company. 17Alpha-ethynylestriol 3-Cyclopentyl ether. 3,868,452, Cl. 424-238.000.

Krabbe, Heinrich F., to Analogy Devices, Inc. High-performance solid-state amplifier system. 3,868,583, Cl. 330-30.00D.

Krabetz, Richard: *See*—
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz, 3,868,417.

Kratel, Gunter; Stohr, Gunter; Vogt, Georg; and Hechtl, Wolfgang, to Elektroschemelzwerk Kempten GmbH. Elastomers made from hardenable masses based on diorganopolysiloxanes. 3,868,345, Cl. 260-37.0SB.

Kraus, Erhard: *See*—
Stonner, Hans-Martin; Knoppe, Ulrich Von; Weisner, Paul; Kraus, Erhard; and Zigelsky, Fritz, 3,868,335.

Kressley, Leonard J.: *See*—
Frevel, Ludo K.; and Kressley, Leonard J., 3,868,444.

Krishna, Surinder: *See*—
New, Thorndike C.; and Krishna, Surinder, 3,868,720.

Kroll, Wolfram R.; and Long, Robert B., to Exxon Research and Engineering Company. Organo metal complexes. 3,868,398, Cl. 260-438.100.

Kronemberg, Stanley: *See*—
Basso, Michael J.; and Kronemberg, Stanley, 3,868,511.

Krukonis, Val J., to Avco Corporation. Tungsten substrate for high-strength high-modulus filament. 3,868,230, Cl. 29-198.000.

Kube, Donald H.: *See*—
Hoffman, Charles Robert; and Kube, Donald H., 3,868,657.

Kubota, Kohei: *See*—
Itoh, Takuji; Akitsuki, Ikuo; Miura, Tadashi; and Kubota, Kohei, 3,868,317.

Kuipers, Jack. Object tracking and orientation determination means, system and process. 3,868,565, Cl. 324-34.00R.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, 3,868,719.

Kumabe, Kiyoshi: *See*—
Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, 3,868,450.

Kupsky, George A., to Burroughs Corporation. Multi-position character display panel. 3,868,535, Cl. 313-519.000.

Kuramoto, Yoshio, to Minolta Camera Kabushiki Kaisha. Electric exposure control camera. 3,868,700, Cl. 354-23.000.

Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, to Kulite Semiconductor Products, Inc. Thin ribbon-like glass backed transducers. 3,868,719, Cl. 357-26.000.

Kuster, Hendrik: *See*—
De Vries, Gerhard Heinrich Friedrich; Hornman, Johannes Petrus; Kuster, Hendrik; and Van Esdonk, Johannes, 3,868,527.

Kusumoto, Koshi: *See*—
Mizutani, Yukio; Kusumoto, Koshi; and Mizumoto, Yosinori, 3,868,314.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, 3,868,450.

La Mere Industries Inc.: *See*—
Helke, Robert C., 3,867,729.

La Telemecanique Electrique: *See*—
Simon, Joseph; Ingrain, Raymond; and Jourdan, Charles, 3,868,682.

Laboue, Bernard Andre, to Societe Honeywell Bull (Societe Anonyme). Module rack for connection boxes of printed-circuit cards. 3,868,158, Cl. 312-350.000.

Lagain, Georges. Device for stacking bags. 3,868,290, Cl. 156-510.000.

Lakamp, Ernest A. Detachably mountable visual proximity and alignment indicator for connectable vehicles. 3,867,898, Cl. 116-28.00R.

Lake, William H.; and Thomasson, Gene I., to General Electric Company. Quartz pinches containing sealant glass. 3,868,528, Cl. 313-220.000.

Lancaster, Patrick R., III; and Lancaster, William G., to Lantech, Inc. Process of making a stretched-wrapped package. 3,867,806, Cl. 53-27.000.

Lancaster, William G.: *See*—
Lancaster, Patrick R., III; and Lancaster, William G., 3,867,806.

Landman, Bernard S., to International Business Machines Corporation. Josephson device threshold gates. 3,868,515, Cl. 307-212.000.

Lane, Bruce M.: *See*—
Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., 3,868,104.

Lang, Rudolf: *See*—
Schwarz, Gerhard; Lutz, Walter; and Lang, Rudolf, 3,868,713.

Lange, Helmut. Toy brick and combination of toy bricks. 3,867,784, Cl. 46-25.000.

Langemann, Albert: *See*—
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.

Langen, Jacobus J.: *See*—
Langen, Marinus J. M.; and Langen, Jacobus J., 3,868,055.

Langen, Marinus J. M.; and Langen, Jacobus J. Carton divider. 3,868,055, Cl. 229-15.000.

Langmack, Holger C., Jr.; and Spear, James B. Equipment covering. 3,868,040, Cl. 220-18.000.

Langrish-Smith, Michael Anthony; and Steele, Daniel, to Imperial Chemical Industries Limited. Explosive fuse-cord. 3,867,884, Cl. 102-27.00R.

Lansing Bagnall Limited: *See*—
Goodacre, Cecil; and Leggett, Peter Alfred, 3,868,034.

Lantech, Inc.: *See*—
Lancaster, Patrick R., III; and Lancaster, William G., 3,867,806.

Lapham, James O.; and Atha, Richard C., to Lapham, James O. Flagman signal device. 3,867,775, Cl. 40-125.00H.

Lapham, James O: *See*—
Lapham, James O.; and Atha, Richard C., 3,867,775.

Lapine, Robert L.; and Brower, Bernard C., to Harry H. Bell & Sons, Inc. Method and apparatus for processing shrimp. 3,867,740, Cl. 17-72.000.

Laplume, Jacques, to Societe d'Etudes Techniques et d'Entreprises Generales (Sodeteg). System for locating and transmitting selected images. 3,868,476, Cl. 178-6.000.

Larson, Violet M.: *See*—
Decelles, George A.; and Larson, Violet M., 3,868,471.

Lavitt, Joseph W., to United States of America, Army. Double-base propellant containing a ureide and a resorcylate. 3,868,282, Cl. 149-98.000.

Lawless, John, to Cooper Industries, Inc. Chainsaw file holder. 3,867,853, Cl. 76-36.000.

Lawrence Peska Associates, Inc.: *See*—
Johnson, Phyllis, 3,867,906.

Lawwill, Ronald C., to Allied Chemical Corporation. Laminated tongue for vehicle seat belt buckle system. 3,868,627, Cl. 340-52.00E.

Lear Siegler, Inc.: *See*—
Jarosek, Gordon G., 3,868,163.

Leard, Joe W.: *See*—
Hartman, Jack; Leard, Joe W.; and Sharp, James L., 3,867,819.

Lebert, Ulrich: *See*—
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz, 3,868,417.

Le Can, Claude Jan Principe Frederic; and Steinmaier, Walter, to U.S. Philips Corporation. Semiconductor device having at least two transistors and method of manufacturing same. 3,868,722, Cl. 357-44.000.

Lechaton, John S.; Richard, Leo P.; and Smith, Daryl C., to International Business Machines Corporation. Integrated circuit structure accommodating via holes. 3,868,723, Cl. 357-54.000.

Le Duff, Henry Antoine. Lifting truck, particularly adapted for cylindrical containers. 3,868,033, Cl. 214-707.000.

Lee, Jack C. Apparatus for moving and rotating long workpieces such as structural steel. 3,868,024, Cl. 214-1.0QC.

Lee, Robert E. Power driven file. 3,867,747, Cl. 29-76.00A.

Leggett, Peter Alfred: *See*—
Goodacre, Cecil; and Leggett, Peter Alfred, 3,868,034.

Leibach, Heinrich, to Motoren- und Turbinen-Union Munchen GmbH. Turbojet engine for vertical or short take-off and landing airplanes. 3,867,813, Cl. 60-225.000.

Leicht, Alfred: *See*—
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.

Lemaire, Bernard J., to Ressorts du Nord S.A. Radiant burner and furnace for treating at high temperature. 3,868,212, Cl. 431-171.000.

Lemmen, Vhendrikus Johannes: *See*—
Van Osterhout, Gerard Willem; Lemmen, Vhendrikus Johannes; and Klomp, Cornelis Johannes, 3,867,900.

Lenkefi, Janos: *See*—
Natkai, Lajos; and Lenkefi, Janos, 3,867,868.

Leon, Edward: *See*—
Shatz, Malcolm H.; and Leon, Edward, 3,868,276.

Leroy, Vincent Marguerite; and Liesenborghs, Roland Cesar Amand, to Societe Anonyme Cockerill-Ougree-Providence et esperance-Longdoz en Abrege Cockerill. Method of producing a steel product having an oxidation-resistant coating. 3,868,277, Cl. 148-12.100.

Lescoa, Inc.: *See*—
Vander Ley, Robert J., 3,868,156.

Lesniak, John M.: *See*—
Eisdorfer, Norman R.; Lesniak, John M.; and Lichstein, Bernard M., 3,867,935.

Lesondak, William V. Portable traffic barricade. 3,868,630, Cl. 340-119.000.

Lesure, Ernest Jacques Andre. Method and apparatus for converting a force or mechanical movement into an electrical quantity and servo-system embodying same. 3,868,556, Cl. 318-676.000.

Leuthold, Peter Eugen: *See*—
Bagdasarjanz, Felix; and Leuthold, Peter Eugen, 3,868,576.

Le Vaux, Rene G.: *See*—
Samuels, Peter B., 3,867,944.

Lever Brothers Company: *See*—
Mazzola, Louis R.; and Ferreri, Paul, 3,868,336.

Levin, Herman, to Industrial Dynamics, Inc. Programmable process and production control systems. 3,868,648, Cl. 340-172.500.

Levine, Beth. Resilient retainer for heel strap of a shoe. 3,867,771, Cl. 36-11.500.

Lewis, Donald J.: *See*—
Radke, Donald G.; and Lewis, Donald J., 3,868,126.

Lewyckyj, Roman, to Scott Paper Company. Absorbent pad and method for making same. 3,868,287, Cl. 156-201.000.

Ley, Kurt; Seng, Florin; and Metzger, Karl George, to Bayer Aktiengesellschaft. 3-Amino-1,2,4-benzotriazine-1,4-di-N-oxides and processes for their preparation. 3,868,371, Cl. 260-249.500.

Libbey-Owens-Ford Company: *See*—
Miller, Alfred H., 3,867,748.

Lichstein, Bernard M.: *See*—
Eisdorfer, Norman R.; Lesniak, John M.; and Lichstein, Bernard M., 3,867,935.

Lie, Finn. Spring mechanism for a tiltable member of a tilting chair. 3,868,144, Cl. 297-304.000.

Liesenborghs, Roland Cesar Amand: *See*—
Leroy, Vincent Marguerite; and Liesenborghs, Roland Cesar Amand, 3,868,277.

Light, Clyde L.: *See*—
Cruz, Ramon C.; Light, Clyde L.; and Nelson, Donald J., 3,867,977.

Lightbourn, Julieta Rubio: *See*—
Ikekawa, Nobuo; Morisaki, Masuo; and Lightbourn, Julieta Rubio, 3,868,396.

Lilly Industries, Ltd.: *See*—
Szinai, Stephen S.; Crank, George; and Harding, David R. K., 3,868,384.

Lindblad, Kenneth O.; and Dufresne, Ralph E., to Anaconda Company, The. Recovery of metal values from copper slag. 3,868,440, Cl. 423-41.000.

Linde Aktiengesellschaft: *See*—
Turnwald, Ernst, 3,867,958.

Lindemann, Hans Joachim. Insufflation apparatus for introducing limited quantities of carbon dioxide into the human body for operative purposes. 3,867,941, Cl. 128-303.000.

Lindemann, Johann: *See*—
Blattry, Hans; and Lindemann, Johann, 3,868,120.

Linden Laboratories, Inc.: *See*—
Joyner, Bobby L.; Yearick, Betty L.; Kaiser, Harold S.; and Anderson, James W., 3,867,929.

Lindley, Michael W.: *See*—
Gazza, George E.; and Lindley, Michael W., 3,868,267.

Lindo, Neil A.: *See*—
Zinnes, Harold; Schwartz, Martin L.; Lindo, Neil A.; and Shavel, John, Jr., 3,868,367.
Zinnes, Harold; and Lindo, Neil A., 3,868,379.

Lindsey, Keith E.; and Lindsey, L. E. Helicopter threadable stringing block assembly for power conductors. 3,868,089, Cl. 254-134.3PA.

Lindsey, L. E.: *See*—
Lindsey, Keith E.; and Lindsey, L. E., 3,868,089.

Ling, Hans G.: *See*—
Campbell, Gerald A.; Cohen, Hyman L.; Ling, Hans G.; and Ponticello, Ignazio S., 3,868,252.

Linn, Donald F.; and Wishart, George L., to Lipe-Rollway Corporation. Self-adjusting release mechanism for friction clutches. 3,868,006, Cl. 192-111.00A.

Liogonky, Boris Izrailevich: *See*—
Berlin, Alfred Anisimovich; Liogonky, Boris Izrailevich; and Zapadinsky, Isaakovich, 3,868,348.

Lipe-Rollway Corporation: *See*—
Hesselein, Robert J., 3,867,875.
Linn, Donald F.; and Wishart, George L., 3,868,006.

Lippert, Irving S.; and Stella, Joseph A., to Polaroid Corporation. Compressed open cell foam nozzle sealing assembly. 3,868,716, Cl. 354-317.000.

Lippy Can Co., Ltd.: *See*—
Knize, Elmer J., 3,868,041.

Lisk, Timothy A., to Amerace Corporation. Insulating receptacle with test point. 3,868,164, Cl. 339-59.00R.

Litzinger, Charles H. Slow troll fishing lure. 3,867,780, Cl. 43-42.500.

Liu, Charles C.; and Hofer, Dean A., to Texas Instruments Incorporated. Log periodic pole mounted marker beacon antenna. 3,868,689, Cl. 343-101.000.

Livesay, Richard Edward: *See—*
Cobb, Delwin Earl; Fidler, Jerry Dale; Gutman, Nathan; Livesay, Richard Edward; and Stemler, Orrin Arthur, 3,868,145.

LKB-Produkter AB: *See—*
Soderqvist, Anton, 3,868,082.

Lloyd, Raymond A., to Westinghouse Electric Corporation. Contactless infrared diagnostic test system. 3,868,508, Cl. 250-330.000.

Lob, Fritz: *See—*
Maucher, Paul; and Lob, Fritz, 3,868,099.

Lombardi, Raymond P.: *See—*
Coulter, Stanley M.; and Lombardi, Raymond P., 3,868,064.

Long, Robert B.: *See—*
Kroll, Wolfram R.; and Long, Robert B., 3,868,398.

Long, Wendell M. Catheter stylets. 3,867,945, Cl. 128-349.00R.

Lorteije, Jean Hubertus Josef, to U.S. Philips Corporation. Visual display apparatus including a liquid crystal display panel. 3,868,674, Cl. 340-324.00M.

Lou, Nils, to Modular Sound Systems, Inc. Speaker enclosure. 3,867,996, Cl. 181-148.000.

LoVecchio, Paul: *See—*
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., 3,867,757.

Lown, Harold, to General Electric Company. Centrifugal compressor with rotating vaneless diffuser powered by leakage flow. 3,868,196, Cl. 415-146.000.

Lubowski, Stanley J.: *See—*
Prener, Jerome S.; and Lubowski, Stanley J., 3,868,512.

Lubrizol Corporation, The: *See—*
Meinhardt, Norman A.; and Adams, Charles Wesley, 3,868,330.

Lucas Electrical Company, The: *See—*
Hill, William Frank, 3,868,664.

Lucas Electrical Company Limited, The: *See—*
Winkley, Albert William; and Williams, David Gordon, 3,868,558.

LuK Lamellen und Kupplungsbau G.m.b.H.: *See—*
Maucher, Paul; and Lob, Fritz, 3,868,099.

LuK Lamellen und Kupplungsbau GmbH: *See—*
Maucher, Paul, 3,868,100.

Lummus Company, The: *See—*
Cox, Robert P., 3,868,428.

Lundahl, Ezra Cordell, to Ezra C. Lundahl Inc. Air delivery system. 3,868,032, Cl. 214-522.000.

Lutz, Michael A.: *See—*
Knauer, Wolfgang; and Lutz, Michael A., 3,868,550.

Lutz, Walter: *See—*
Schwarz, Gerhard; Lutz, Walter; and Lang, Rudolf, 3,868,713.

MacAfee, John W., to United States of America, Navy. Digital single-sideband modulator. 3,868,601, Cl. 332-45.000.

MacDonald, Francis X.; and MacDonald, Paul K., to P. X. Industries, Inc. Cart for dialysis machine. 3,868,154, Cl. 312-250.000.

MacDonald, Paul K.: *See—*
MacDonald, Francis X.; and MacDonald, Paul K., 3,868,154.

MacDonald, Robert A., to Ferguson Industries, Inc. Method of making granular triple superphosphate fertilizer. 3,868,243, Cl. 71-41.000.

Mack, Alfred: *See—*
Patrusky, Bernard Eugene; and Mack, Alfred, 3,868,481.

Mac Lean, Gerald K.; and Minzenberger, Thomas C., to Zenith Radio Corporation. Shadow mask and overscan shield assembly. 3,868,532, Cl. 313-407.000.

MacLeay, Ronald Edward: *See—*
Sheppard, Chester Stephen; and MacLeay, Ronald Edward, 3,868,359.

MacLeod, Ivan R., to Raymond Lee Organization, Inc., The, a part interest. Electrical bottle opener. 3,867,854, Cl. 81-3.200.

Madacsi, John P.: *See—*
Franklin, William E.; Rowland, Stanley P.; and Madacsi, John P., 3,868,216.

MADAG Maschinen- und Apparatebau Dietikon AG: *See—*
Blattner, Kurt, 3,867,881.

Maddalena, John, to Cities Service Company. Extruder. 3,868,046, Cl. 222-146.0HE.

Magee, Philip S. Insecticidal O,S-dihydrocarbyl-N-acylphosphoroamidothioates and S,S-dihydrocarbyl-N-acylphosphoroamidodithioates. 3,868,449, Cl. 424-217.000.

Magliaro, Luke P. Device for removing animal droppings. 3,868,135, Cl. 294-1.00R.

Magne, Robert, to Rhone-Poulenc S.A. Process for the preparation of condensation products of silicon-containing amines with epoxide compounds. 3,868,342, Cl. 260-29.20M.

Magorian, William Ray, to United States of America, Navy. Range tracking device for a portable attack warning radar. 3,868,686, Cl. 343-7.00A.

Maguire, Hugh F.; and Miller, William J. Basketball foul indicia display apparatus. 3,868,671, Cl. 340-323.000.

Mahieu, Yves, to Societe Anonyme dite: Ateliers Mecaniques du Douaisis. Draw bar for towing aircraft. 3,868,128, Cl. 280-453.000.

Maisch, Weldon F.: *See—*
Van Lanen, James M., deceased; Smith, Merritt B.; and Maisch, Weldon F., 3,868,307.

Maki, Naoki, to Hitachi, Ltd. Apparatus for levitating and stabilizing a vehicle driven by a linear motor. 3,867,886, Cl. 104-148.0SS.

Malanka, Douglas Peter: *See—*
Pighin, Albert; Creswell, Robert Alvin; and Malanka, Douglas Peter, 3,868,534.

Malin, Eugene F. Moisture detection. 3,867,837, Cl. 73-73.000.

Malizia, Donato: *See—*
Furda, Ivan; Feldman, Jacob Richard; and Malizia, Donato, 3,868,465.

Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, 3,868,719.

Maloney, Kenneth M.: *See—*
Henderson, David C.; and Maloney, Kenneth M., 3,868,266.

Manaka, Kazuo, to Broadview Chemical Corporation. Acrylic acid esters. 3,868,409, Cl. 260-486.00R.

Mankins, William Lawrence: *See—*
Suarez, Francis Sardovia; Mankins, William Lawrence; and Roberts, James Earl, 3,867,976.

Mansouri, Hosein: *See—*
Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, 3,868,324.

Marathon Oil Company: *See—*
Johnson, Irvin D., 3,868,638.

Marchi, Romolo: *See—*
Preda, Giuliano; and Marchi, Romolo, 3,867,778.

Marsch, Hans-Dieter, to Friedrich Uhde GmbH. Steam generator. 3,867,907, Cl. 122-34.000.

Marshall, Duane, to United States Scientific Instruments, Inc. Energy storage method and apparatus. 3,868,562, Cl. 321-13.000.

Marshall, James E.: *See—*
Ryan, John W.; Kennedy, Melvin R.; and Marshall, James E., 3,867,785.

Marshall, John R.: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.

Marsocci, Angelo August, to Electro Signal Lab, Inc. Optical smoke detector with light scattering test device. 3,868,184, Cl. 356-103.000.

Martel, Jacques; and Toromanoff, Edmond, to Roussel UCLAF. Novel cyclopentanone-2-carboxylates. 3,868,402, Cl. 260-468.00K.

Marthaler, Max; and Frauchiger, Ulrich, to Ciba-Geigy AG. Process for the rapid processing of silver dye bleach material. 3,868,253, Cl. 96-53.000.

Martin, Fred David: *See—*
Boothe, Jerry Emile; Martin, Fred David; and Sharpe, Andrew Jackson, Jr., 3,868,328.

Martin, Frederick Raymond Patrick. Self-levelling lamps. 3,868,500, Cl. 240-7.1LJ.

Marulic, Walter J.; and Ferris, Ray L., to Pullman Incorporated. Engaged kingpin detector assembly for fifth wheel plate. 3,868,127, Cl. 280-434.000.

Maruszczak, Wlodzimierz W. Rotary strip accumulator. 3,868,065, Cl. 242-55.000.

Marvin Glass & Associates: *See—*
Glass, Marvin I.; and McKay, Robert S., 3,868,113.
Glass, Marvin I.; and Schoenfield, Palmer J., 3,868,177.

Masher, Dale P., to Gulf & Western Industries, Inc. Digital loop detector system. 3,868,626, Cl. 340-38.00L.

Mashiko, Yoshinori: *See—*
Murata, Yuuji; Mashiko, Yoshinori; Uchida, Yukio; and Matsumoto, Mitsuru, 3,868,510.

Maskery, Arthur, to Westinghouse Brake & Signal Company Limited. Brake control apparatus for a blending braking system to reduce effects of relative braking response times. 3,868,150, Cl. 303-20.000.

Massachusetts Institute of Technology: *See—*
Schreiber, William F., 3,868,167.

Masucci, Alan A. Method of producing variable profile bi-focal lens. 3,867,798, Cl. 51-284.000.

Masuda, Yoshiro; Kato, Kenji; Takayama, Yoshihiro; Kida, Kenji; and Nakanishi, Meiseki, to Mitsubishi Petrochemical Co., Ltd. Process for producing ethanol-assimilating yeast. 3,868,305, Cl. 195-49.000.

Masuoka, Fujio, to Tokyo Shibaura Electric Co., Ltd. Avalanche injection type mos memory. 3,868,187, Cl. 357-23.000.

Mathias Klein and Sons, Inc.: *See—*
Joseph, Alexander J., 3,867,998.

Matsuda, Hidefumi: *See—*
Otsuki, Tadao; Tsuboi, Tokishige; Sudo, Masashi; and Matsuda, Hidefumi, 3,868,207.

Matsui, Kaname: *See—*
Sakai, Tomoharu; and Matsui, Kaname, 3,868,265.

Matsui, Masatake: *See—*
Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, 3,868,436.

Matsumoto, Mitsuru: *See—*
Murata, Yuuji; Mashiko, Yoshinori; Uchida, Yukio; and Matsumoto, Mitsuru, 3,868,510.

Matsumoto, Shoichi; and Saito, Kazuyoshi, to Tokyo Shibaura Electric Co., Ltd. Organic photoconductive composition containing chlorinated paraffin. 3,868,251, Cl. 96-1.500.

Matsushima, Yukinori: *See—*
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.

Matsushita Electric Industrial Co., Ltd.: *See—*
Koyangi, Yukio, 3,868,609.

Matsuura, Takashi. Automotive vehicle storing apparatus for parking. 3,868,027, Cl. 214-16.10B.

Mattel, Inc.: *See—*
Ryan, John W.; Kennedy, Melvin R.; and Marshall, James E., 3,867,785.

Matthes, Hans. Resonant circuit transformer. 3,868,561, Cl. 321-10.000.

Matveev, Viktor Vasilievich: *See—*
Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich, 3,867,741.

Matzinger, August: *See—*
Benz, Gottlieb; and Matzinger, August, 3,868,291.

Mau, Theodore J., Jr.; and Peterson, John L., to Teletype Corporation. Display apparatus including character enhancement. 3,868,673, Cl. 340-324.0AD.

Maucher, Paul; and Lob, Fritz, to LuK Lamellen und Kupplungsbau G.m.b.H. Annularly resilient, conically shaped component. 3,868,099, Cl. 267-161.000.

Maucher, Paul, to LuK Lamellen und Kupplungsbau GmbH. Spring element. 3,868,100, Cl. 267-162.000.

Maurischat, Gunther: *See—*
Hartwig, Karl; and Maurischat, Gunther, 3,868,666.

Mausser, Robert. Grain distributor. 3,868,028, Cl. 214-17.00C.

Max-Planck-Gesellschaft zur Forderung der Wissenshaften e.V.: *See—*
Genzel, Ludwig; and Gast, Jurgen, 3,868,185.

Maynard, Dale F.: *See—*
Kellberg, Howard E.; and Maynard, Dale F., 3,868,264.

Mazzola, Louis R.; and Ferreri, Paul, to Lever Brothers Company. Process for improving flowability of detergents. 3,868,336, Cl. 252-527.000.

McAlexander, Belton T.: *See—*
Mumola, Peter B.; and McAlexander, Belton T., 3,868,591.

McArthur, Colin S.: *See—*
Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., 3,868,289.

McBride, Lyle E., Jr.; Bowman, William W.; Stoeckler, Hans A.; Hanson, Harold A.; and Gibola, Joseph J., to Texas Instruments Incorporated. Level sensor and method of making the same. 3,868,620, Cl. 338-28.000.

McCarthy, James L.: *See—*
Post, Melvin J.; and McCarthy, James L., 3,868,696.

McConnaughay, Kenneth E. Method of making a paving composition. 3,868,263, Cl. 106-281.000.

McCrey, Lorretta: *See—*
Hamilton, Lillie; and McCrey, Lorretta, 3,867,890.

McDonough, Cletus: *See—*
Horecky, Stanley V.; and McDonough, Cletus, 3,867,760.

McKay, Robert S.: *See—*
Glass, Marvin I.; and McKay, Robert S., 3,868,113.

McKee, Carl L.: *See—*
Urban, Ellison C., II; and McKee, Carl L., 3,867,753.

McKenney, Henry F., to Chrysler Corporation. Missile altitude sensing system. 3,867,843, Cl. 73-490.000.

McKeon, Thomas F., Jr.; and Meier, George D., to General Electric Company. Plastic wall construction as a wall unit. 3,868,296, Cl. 161-43.000.

McManus, Edward C.: *See—*
Miller, Brinton M.; and McManus, Edward C., 3,868,455.

McMaster, Emery D. Hook setting apparatus. 3,867,779, Cl. 43-15.000.

McMillan, Stephen L., to General Electric Company. Friction clutch with centrifugal and magnetic speed control. 3,868,005, Cl. 192-105.0CS.

McMorris, Arthur H.: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; and Schweppe, Joseph L., 3,867,882.

Mead Corporation, The: *See—*
Dressler, John L., 3,868,698.

Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, to International Standard Electric Corporation. Magnetically actuated sealed contact. 3,868,611, Cl. 335-196.000.

Med General, Inc.: *See—*
Ersek, Robert A., 3,867,925.

Meddaugh, Gard E., to Varian Associates. Controllable microwave power attenuator. 3,868,602, Cl. 333-17.000.

Medical Development Corporation: *See—*
Holbrook, Legrand K., 3,868,039.

Medicotech Company: *See—*
Szpur, Roman; and Finley, Robert K., Jr., 3,868,016.

Meertens, Jan; and Merkx, Antonius H. J., to du Pont de Nemours, E. I., and Company. Spliced tow and process for making spliced tow. 3,867,810, Cl. 57-142.000.

Mehta, Minoo Dossabhoy: *See—*
Brain, Edward George; Hanson, John Christopher; and Mehta, Minoo Dossabhoy, 3,868,405.

Meier, Franz; Ossendorf, Erich; and Wolfgarten, Hubert, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Centrifugal gas-liquid separator. 3,868,236, Cl. 55-203.000.

Meier, George D.: *See—*
McKeon, Thomas F., Jr.; and Meier, George D., 3,868,296.

Meier, Markus B., to Burroughs Corporation. Lapping fixture. 3,867,797, Cl. 51-216.00A.

Meiji Seika Kaisha, Ltd.: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Meinhardt, Norman A.; and Adams, Charles Wesley, to Lubrizol Corporation, The. Lubricants and fuel containing high molecular weight carboxylic acid acylating agents and their derivatives. 3,868,330, Cl. 252-33.600.

Meinke, Hans H. Dielectric directional antenna. 3,868,694, Cl. 343-753.000.

Merck & Co., Inc.: *See—*
Jones, Howard, 3,868,415.
Miller, Brinton M.; and McManus, Edward C., 3,868,455.
Shen, Tsung-Ying; and Jones, Howard, 3,868,414.

Merkx, Antonius H. J.: *See—*
Meertens, Jan; and Merkx, Antonius H. J., 3,867,810.

Merrill, Edward W., to High Voltage Engineering Corporation. Heat resistant polymeric compositions. 3,868,346, Cl. 260-37.0SB.

Merry, Carl Alan, to Schaefer Marine Products. Rotary stay release. 3,867,896, Cl. 114-109.000.

Merz, Edmund H.: *See—*
Erlandson, Paul M.; and Merz, Edmund H., 3,868,206.

Mesek, Frederick K.; and Repke, Virginia L., to Johnson & Johnson. Scrim reinforced disposable diaper. 3,867,940, Cl. 128-287.000.

Messer Griesheim GmbH: *See—*
Bauer, Helmut; and Stanzel, Rudolf, 3,868,095.

Messing, Ralph A., to Corning Glass Works. Method of making fructose with immobilized glucose isomerase. 3,868,304, Cl. 195-31.00F.

Metal Closures Limited: *See—*
Hadley, William Henry, 3,868,038.

Metallgesellschaft AG: *See—*
Stonner, Hans-Martin; Knoppe, Ulrich Von; Weisner, Paul; Kraus, Erhard; and Zigelsky, Fritz, 3,868,335.

Metzger, Karl George: *See—*
Ley, Kurt; Seng, Florin; and Metzger, Karl George, 3,868,371.

Mewissen, Jan Alfons Catharina: *See—*
De Fraeye, Dirk Jules Remi; and Mewissen, Jan Alfons Catharina, 3,868,531.

Michael, Peter Colin, to Micro Consultants Limited. Analogue-to-digital convertors. 3,868,678, Cl. 340-347.0AD.

Mickelson, Richard C. Plant carrier. 3,867,788, Cl. 47-35.000.

Micro Consultants Limited: *See—*
Michael, Peter Colin, 3,868,678.

Microbyx Corporation: *See—*
Bucalo, Louis, 3,867,924.

Midland-Ross Corporation: *See—*
Treglown, Edward M., 3,868,665.

Mikami, Yuzo; Kobayashi, Hideyuki; and Sasaki, Tetsuya, to Kajima Kensetsu Kabushiki Kaisha. Method of forming joint construction of precast concrete columns and beams. 3,867,805, Cl. 52-744.000.

Mikenas, Vitas Anthony: *See—*
Schwartzmann, Alfred; Mikenas, Vitas Anthony; Thomas, John Jerome; and Chang, Kern Konan, 3,868,588.

Miles, Grant M.: *See—*
Miles, John R.; and Miles, Grant M., 3,868,173.

Miles, John R.; and Miles, Grant M., to Ambatis, Maris; Shannon, Thomas D.; and DeMaria, Walter J. Objective lens assembly for projection television. 3,868,173, Cl. 350-215.000.

Miller, Alfred H., to Libbey-Owens-Ford Company. Supporting and driving frangible rollers. 3,867,748, Cl. 29-115.000.

Miller, Brinton M.; and McManus, Edward C., to Merck & Co., Inc. Certain benzyl purines in combination with certain benzoylacrylanilides as coccidiostats. 3,868,455, Cl. 424-253.000.

Miller, Herbert E.; and Gagnebin, Charles L., III. Loran receiver envelope-cycle discrepancy compensation. 3,868,690, Cl. 343-103.000.

Miller, Herbert E.; and Myers, Michael Harry. Loran receiver automated master search. 3,868,691, Cl. 343-103.000.

Miller, William J.: *See—*
Maguire, Hugh F.; and Miller, William J., 3,868,671.

Millet Roux & Cie., Ltee.: *See—*
Pageot, Jacques; Roy, Yvon; and Purkhardt, Cesar, 3,868,103.

Mills, Albert A., Jr.; and Koerner, Norman H., Sr., to Columbus Bin Company, Inc., The. Dust control system for batch plant charging of transit mixers. 3,868,238, Cl. 55-273.000.

Minasy, Arthur J., to Knogo Corporation. Reduction of false alarms in electronic theft detection systems. 3,868,669, Cl. 340-280.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kuramoto, Yoshio, 3,868,700.
Sekida, Minoru; and Ohba, Masaru, 3,868,711.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, 3,868,181.
Ueda, Hiroshi, 3,868,703.
Yamada, Seiji; and Yata, Kotaro, 3,868,704.

Minzenberger, Thomas C.: *See—*
Mac Lean, Gerald K.; and Minzenberger, Thomas C., 3,868,532.

Mirimanian, Vigen Khachaturovich: *See—*
Arutjunian, Vladimir Semenovich; and Mirimanian, Vigen Khachaturovich, 3,868,564.

Mishima Kiesan Co., Ltd.: *See—*
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.

Mitchell, John C. Camper heating system. 3,868,060, Cl. 237-12.30B.

Mitchhart, Ray M.: *See—*
Hisey, Robert W.; and Mitchhart, Ray M., 3,867,989.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Hirata, Tsuyoshi, 3,868,563.

Mitsubishi Paper Mills, Ltd.: *See*—
Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, 3,868,257.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Masuda, Yoshiro; Kato, Kenji; Takayama, Yoshihiro; Kida, Kenji; and Nakanishi, Meiseki, 3,868,305.
Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, 3,868,436.

Mitsui Shipbuilding & Engineering Co., Ltd.: *See*—
Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, 3,868,101.
Yamamoto, Osami, 3,867,897.

Mitsumoto, Norio: *See*—
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.

Miura, Tadashi: *See*—
Itoh, Takuji; Akitsuki, Ikuo; Miura, Tadashi; and Kubota, Kohei, 3,868,317.

Miya, Masao: *See*—
Fukuda, Shuichi; and Miya, Masao, 3,868,593.

Miyamura, Yoshinobu: *See*—
Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, 3,868,450.

Miyazawa, Sadayuki: *See*—
Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, 3,868,257.

Mizuba, Seth Setsuo: *See*—
Hsu, Charles; Jiu, James; and Mizuba, Seth Setsuo, 3,868,412.

Mizumoto, Yosinori: *See*—
Mizutani, Yukio; Kusumoto, Koshi; and Mizumoto, Yosinori, 3,868,314.

Mizutani, Yukio; Kusumoto, Koshi; and Mizumoto, Yosinori, to Tokuyama Soda Kabushiki Kaisha. Ion exchange membranes. 3,868,314, Cl. 204-296.000.

MKT-tehtaat Oy: *See*—
Gabriel-Robez, Roland, 3,868,092.

Mlavsky, Abraham I.; and Pandiscio, Nicholas A., to Tyco Laboratories, Inc. Method of growing crystalline bodies from the melt. 3,868,228, Cl. 23-301.0SP.

Modular Sound Systems, Inc.: *See*—
Lou, Nils, 3,867,996.

Molex Products Company: *See*—
Horecky, Stanley V.; and McDonough, Cletus, 3,867,760.

Molteni, Luigi; Tenconi, Franco; and Tagliabue, Renato. Diphenylyl-alkanoylaminopyridines and salts thereof. 3,868,380, Cl. 260-295.0AM.

Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Sr., 3,867,861.

Moniier, Pierre: *See*—
Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, 3,868,490.

Monroe, Thomas D., to Robbins & Myers, Inc. Heat exchange structure. 3,867,981, Cl. 165-55.000.

Monsanto Company: *See*—
Fariss, Robert H.; and Skibo, Andrew D., 3,868,286.
Franz, John E.; and Nufer, Hans L., 3,868,407.
Franz, Raymond A., 3,868,427.

Montanari, Fernando; Calcagno, Benedetto; and Conti, Luciano, to Societa Italiana Resine S.p.A. Process for preparing beta,beta'-bis-(3,5-dibromo-4-hydroxy-phenyl)-propane. 3,868,423, Cl. 260-619.00A.

Moore, Francis C.; and Perkinson, Leon R., to Moore-Perk Corporation. Disposable, sterile temperature control applicator pad for medical application. 3,867,939, Cl. 128-254.000.

Moore, James C., to Portland Wire & Iron Works. Mounting assembly for vehicle rollover protective systems with preloaded cushioning member. 3,868,190, Cl. 403-189.000.

Moore-Perk Corporation: *See*—
Moore, Francis C.; and Perkinson, Leon R., 3,867,939.

Moret, Bertus, to Kennecott Copper Corporation. Double-acting pressurized slide gate. 3,867,959, Cl. 137-602.000.

Morgan, Barrie O.; Branscome, Kenneth M.; Goode, George E.; and Atchley, John Q., to Datotek, Inc. Digital cryptographic system and method. 3,868,631, Cl. 340-146.1AG.

Morgan Construction Company: *See*—
Holbrook, John Adams, 3,867,809.

Morgan, David L.; and Sampson, Peter. Brackets. 3,868,081, Cl. 248-245.000.

Morgan, Fred K.: *See*—
Newberg, Raymond G.; and Morgan, Fred K., 3,868,344.

Morgan, Thomas Nolen, to International Business Machines Corporation. Luminescent device and method therefor. 3,868,281, Cl. 148-190.000.

Morgolenko, Anatoly Sergeevich. Metal-working machine. 3,867,833, Cl. 72-407.000.

Morisaki, Masuo: *See*—
Ikekawa, Nobuo; Morisaki, Masuo; and Lightbourn, Julieta Rubio, 3,868,396.

Morissette, Bernard, to Phentex Inc. Rug hooking needle. 3,867,888, Cl. 112-80.000.

Morrell, William C. Seat cushion. 3,867,732, Cl. 5-349.000.

Morse, Donald W.: *See*—
Tsuchiya, Takuzo; Valentas, Kenneth J.; and Morse, Donald W., 3,867,858.

Morse, Lynn H.; and Nielsen, Anker J., Jr. Locking means for electric meters. 3,867,822, Cl. 70-164.000.

Morton-Norwich Products, Inc.: *See*—
Spencer, Claude F.; and Alaimo, Robert J., 3,868,378.

Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stepanovich; and Deryabkin, Viktor Ilich. Method of manufacturing branched fittings. 3,867,831, Cl. 72-367.000.

Motoren- und Turbinen-Union Munchen GmbH: *See*—
Leibach, Heinrich, 3,867,813.

Motorola, Inc.: *See*—
Davidsohn, Uryon S., 3,868,721.
Hoffman, Charles Robert; and Kube, Donald H., 3,868,657.
Schoeff, John A., 3,868,517.

Mourier, Emile, to Rhone-Poulenc S.A. Process for the preparation of ortho-hydroxybenzyl alcohols. 3,868,424, Cl. 260-621.000.

Mugino, Yutaka: *See*—
Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, 3,868,258.

Muller, George H.: *See*—
Grenier, Emile P.; and Muller, George H., 3,867,919.

Mumola, Peter B.; and McAlexander, Belton T., to United States of America, National Aeronautics and Space Administration. Laser head for simultaneous optical pumping of several dye lasers. 3,868,591, Cl. 331-94.50P.

Munder, Paul Gerhard: *See*—
Robock, Klaus; Teichert, Ullrich; and Munder, Paul Gerhard, 3,868,223.

Munzinger, Friedrich. Arcuately oscillating piston machine. 3,867,848, Cl. 74-70.000.

Murata, Yuuji; Mashiko, Yoshinori; Uchida, Yukio; and Matsumoto, Mitsuru, to Nippon Steel Corporation. Method for sensing profile of sheet or plate materials. 3,868,510, Cl. 250-366.000.

Murgio, Joseph M.; Pincus, Lawrence J.; and Boehm, Guenter J., to Telesciences, Inc. Event monitoring transceiver. 3,868,480, Cl. 179-8.00A.

Murphy, Lloyd: *See*—
Gregory, Lawrence; Murphy, Lloyd; and Hagen, Donald H., 3,867,851.

Murphy, Wesley T., to Vercon Products, Inc. Floor support assembly for building structures. 3,867,802, Cl. 52-483.000.

Murski, Kenneth: *See*—
Sykes, Donald J.; Papaconstantinou, Elias; and Murski, Kenneth, 3,868,485.

Muryoi, Takeshi, to Nippon Kogaku, K.K. Filter change-over device in an objective lens for a single lens reflex camera. 3,868,714, Cl. 354-289.000.

Myers, Michael Harry: *See*—
Miller, Herbert E.; and Myers, Michael Harry, 3,868,691.

Nachman, Joseph F.; and Hammer, Alvin N., to International Copper Research Association Inc. High damping copper-manganese-aluminum alloy. 3,868,279, Cl. 148-160.000.

Nadelson, Jeffrey: *See*—
Houlihan, William J.; and Nadelson, Jeffrey, 3,868,390.

Nakajima, Yutaka: *See*—
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Nakamura, Asao: *See*—
Tamura, Fumihide; Ozawa, Yoichi; and Nakamura, Asao, 3,868,394.

Nakamura, Shuzo: *See*—
Aratani, Tadatoshi; and Nakamura, Shuzo, 3,868,401.

Nakanishi, Meiseki: *See*—
Masuda, Yoshiro; Kato, Kenji; Takayama, Yoshihiro; Kida, Kenji; and Nakanishi, Meiseki, 3,868,305.

Nakanishi, Mutsuo: *See*—
Ito, Yoshinori; and Nakanishi, Mutsuo, 3,868,487.

Nakaya, Kiyotaka, to Tokyo Hoshiden Kabushiki Kaisha. Push-button switch having improved locking structure to inhibit withdrawal of a slidable switch body from its associated casing. 3,868,486, Cl. 200-159.00R.

Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri. Limited-range radiocommunication system with direction-indicating signaling means. 3,868,575, Cl. 325-51.000.

Nathan, Amos; and Even, Reed K. Constant phase distributed impedance. 3,868,587, Cl. 330-38.00M.

National Distillers and Chemical Corporation: *See*—
Newberg, Raymond G.; and Morgan, Fred K., 3,868,344.

National Patent Development Corporation: *See*—
Gayle, Robert, 3,868,294.
Kliment, Karel, 3,868,447.

National Research Development Corporation: *See*—
Smyth, Derek George, 3,868,356.
Smyth, Derek George; and Ko, Arthur Sai Chun, 3,868,357.

Natkai, Lajos; and Lenkefi, Janos, to Orszagos Koolaj- es Gazipari Troszt. Apparatus for the machining of cycloidal surfaces. 3,867,868, Cl. 90-20.000.

Nawata, Kiyoshi: *See*—
Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, 3,868,375.

NCR Corporation: *See*—
Zeutschel, Heinz, 3,868,179.

Neal, William C. Kick-over tool. 3,867,983, Cl. 166-117.500.

Neely, Joseph E.: *See*—
Cassens, Nicholas, Jr.; and Neely, Joseph E., 3,868,261.

Negi, Takafusa, to Nippon Gakki Seizo Kabushiki Kaisha. Auxiliary ski for physically handicapped persons. 3,868,122, Cl. 280-11.37B.

Nelson, Donald J.: *See—*
Cruz, Ramon C.; Light, Clyde L.; and Nelson, Donald J., 3,867,977.

Neu, Max Gerhard, to Foseco International Limited. Deoxidising molten non-ferrous metals. 3,868,248, Cl. 75-76.000.

New, Thorndike C.; and Krishna, Surinder, to Westinghouse Electric Corporation. High frequency bipolar transistor with integral thermally compensated degenerative feedback resistance. 3,868,720, Cl. 357-34.000.

Newberg, Raymond G.; and Morgan, Fred K., to National Distillers and Chemical Corporation. Oil extended molecular weight controlled alfin gums. 3,868,344, Cl. 260-33.6AQ.

Newcomb, Paul: *See—*
West, Roland James, 3,867,923.

Newton, Robert F.: *See—*
Anderson, Fred A.; and Newton, Robert F., 3,868,195.

Nichol, Kenneth J.: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.

Nielsen, Anker J., Jr.: *See—*
Morse, Lynn H.; and Nielsen, Anker J., Jr., 3,867,822.

Niida, Taro: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Nippon Electric Company, Limited: *See—*
Fukuda, Shuichi; and Miya, Masao, 3,868,593.
Ohyama, Chishio; Tachibana, Makoto; and Takada, Takeshi, 3,868,681.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Negi, Takafusa, 3,868,122.

Nippon Kogaku, K.K.: *See—*
Muryoi, Takeshi, 3,868,714.

Nippon Steel Corporation: *See—*
Murata, Yuuji; Mashiko, Yoshinori; Uchida, Yukio; and Matsumoto, Mitsuru, 3,868,510.

Nitz, Rolf-Eberhard: *See—*
Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, 3,868,377.

Niwa, Tomizo: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Noe, Oskar, to BWG Bergwerke-und Walzwerk Maschinenbau G.m.b.H. Stretcher for continuously moving strip. 3,867,826, Cl. 72-205.000.

Noltac Corporation: *See—*
Slavin, James A., 3,868,715.

Nordin, Harald, to Edward Weck & Company, Inc. Surgical drill with detachable hand-piece. 3,867,943, Cl. 128-305.000.

Norris Industries, Inc.: *See—*
Beisch, Hans R., 3,868,147.

Norton Company: *See—*
Carver, Edgar B.; and Sioui, Richard H., 3,868,233.
Howard, William C., 3,867,795.
Sioui, Richard H.; and Cohen, Harvey M., 3,868,232.

Norton, Richard V., to Sun Research and Development Co. Process for vapor phase ammoxidation. 3,868,400, Cl. 260-464.000.

Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, to Mitsui Shipbuilding & Engineering Co., Ltd. Welding positioner. 3,868,101, Cl. 269-25.000.

NRM Corporation: *See—*
Turk, Leonard G., 3,868,203.

Nuese, Carlos, to United States of America, Navy. Block coded communication system. 3,868,633, Cl. 340-146.1BA.

Nufer, Hans L.: *See—*
Franz, John E.; and Nufer, Hans L., 3,868,407.

Nunn, Ewing D., Jr. Emergency vehicle siren switching apparatus. 3,868,684, Cl. 340-384.00E.

Nuova San Giorgio S.p.A.: *See—*
Piro, Mario, 3,868,650.

Nyffeler, Ernst; and Pfenicher, Peter, to BBC Brown, Boveri & Co. Stationary guide blade structure for axial-flow type turbo-machine. 3,867,869, Cl. 90-11.00C.

Nystrand, Ernst Daniel, to Paper Converting Machine Company. Plybonded, embossed product and apparatus. 3,867,872, Cl. 93-1.100.

Odelberg, Bruce A.: *See—*
Gardner, Christina B.; and Odelberg, Bruce A., 3,868,699.

Oehler AG: *See—*
Grabher, Gerhard, 3,867,891.

Ogawa, Akira: *See—*
Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, 3,868,256.

Ogiso, Katsuhiko, to Rigaku Denki Company Limited. X-ray diffraction instrument. 3,868,506, Cl. 250-278.000.

Ogle, James Alexander: *See—*
Holz, George Ernest; and Ogle, James Alexander, 3,868,543.

Ohata, Satoru: *See—*
Sakurai, Yoshitoshi; and Ohata, Satoru, 3,867,915.

Ohba, Masaru: *See—*
Sekida, Minoru; and Ohba, Masaru, 3,868,711.

Ohkawa, Hideo: *See—*
Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, 3,868,258.

Ohlson, Karl Gunnar. Methods in the production of plant-mixed asphalt concrete. 3,868,262, Cl. 106-281.00R.

Ohno, Sigeyuki: *See—*
Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, 3,868,101.

Ohyama, Chishio; Tachibana, Makoto; and Takada, Takeshi, to Nippon Electric Company, Limited. Character input equipment. 3,868,681, Cl. 340-365.000.

Okada, Hisao; and Sato, Tadashi, to Sony Corporation; and Sony Corporation. Remote control receiver responsive to sound. 3,868,639, Cl. 340-148.000.

Oldham, Keith B., to Canadian Patents and Development Limited. Method and apparatus for electroanalysis. 3,868,578, Cl. 328-127.000.

Olin Corporation: *See—*
Johnson, James T., 3,868,124.
Pryor, Michael J.; and Popplewell, James M., 3,867,799.

Ollivier, Louis A., to Veriflo Corporation. Pressure monitor for a lung ventilator. 3,867,934, Cl. 128-145.800.

Olson, Eldred, to Vi-Amino Feeds, Inc. Prestarter compositions. 3,868,467, Cl. 426-208.000.

Olson, John B., to Utility Products Co. Protected telephone service installation. 3,868,080, Cl. 248-205.00R.

Omega Louis Brandt & Frere S.A.: *See—*
Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, 3,868,490.

O'Neil, Joseph H. Method for making padded envelope. 3,867,874, Cl. 93-61.00R.

Onishi, Kazuo: *See—*
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.

Ono, Hirohisa: *See—*
Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.

Onoda, Toshiaki; and Ito, Yoshimasa, to Tokico Ltd. Revolution movement driving apparatus. 3,867,849, Cl. 74-109.000.

O'Nory, Joseph; and Reister, Richard A., to said O'Nory, by said Reister. Customer service display. 3,868,670, Cl. 340-286.000.

O'Nory, Joseph: *See—*
O'Nory, Joseph; and Reister, Richard A. (assors. to said O'Nory, by said Reister), 3,868,670.

Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, to Mitsubishi Petrochemical Co., Ltd.; and Dainichi Nihon Densen Kabushiki Kaisha, part interest to each. Production of electrical conductors covered with crosslinked material. 3,868,436, Cl. 264-40.000.

Optical Recognition Systems: *See—*
Shah, Mahendra B.; Russell, Donald W.; and Bowman, Harold L., 3,868,635.

Orloff, George. Apparatus for providing a supply of a filtered fluid. 3,868,322, Cl. 210-108.000.

Orszagos Koolaj- es Gazipari Troszt: *See—*
Natkai, Lajos; and Lenkefi, Janos, 3,867,868.

Ortiz, Nilson V. Crab trap. 3,867,782, Cl. 43-105.000.

Ossendorf, Erich: *See—*
Meier, Franz; Ossendorf, Erich; and Wolfgarten, Hubert, 3,868,236.

Ota, Takeshi, to Toyoda Koki Kabushiki Kaisha. Tail stock. 3,867,856, Cl. 82-31.000.

Otsuki, Tadao; Tsuboi, Tokishige; Sudo, Masashi; and Matsuda, Hidefumi, to Shimizu Construction Co., Ltd., The. Apparatus for producing precast concrete members. 3,868,207, Cl. 425-404.000.

Otto, Walter, to Sethco Manufacturing Corporation. Filter tube adapters. 3,868,325, Cl. 210-232.000.

Outboard Marine Corporation: *See—*
Slaker, Frank A., 3,868,063.

Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Method and apparatus for storing and reading data in a memory having catalytic material to initiate amorphous to crystalline change in memory structure. 3,868,651, Cl. 340-173.0LS.

Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Taylor, Everett W., 3,867,746.

Owens-Illinois, Inc.: *See—*
Banyas, John D.; and Ross, Edward A., 3,868,010.
Doucette, Eugene F., 3,867,807.
Hider, Shibley A.; Rogers, John K.; and Wilkins, Colbert W., 3,868,320.
Stengle, Edward J.; and Tillman, James J., 3,868,343.

Owl, Laurance J.; Cody, Jimmy H.; and Kelley, Bill, to Becton, Dickinson and Company. Shoulder guard. 3,867,726, Cl. 2-2.000.

Ozawa, Yoichi: *See—*
Tamura, Fumihide; Ozawa, Yoichi; and Nakamura, Asao, 3,868,394.

P. R. Mallory & Co., Inc.: *See—*
Ayers, Clifton E., 3,868,489.

P. X. Industries, Inc.: *See—*
MacDonald, Francis X.; and MacDonald, Paul K., 3,868,154.

Pachter, Moshe: *See—*
Barak, Amitzur Ze'ev; Weinberg, Joseph Michael; and Pachter, Moshe, 3,868,308.

Pageot, Jacques; Roy, Yvon; and Purkhardt, Cesar, to Millet Roux & Cie., Ltee. Surgical and examination table structure. 3,868,103, Cl. 269-325.000.

Palitex Project-Company GmbH: *See—*
Franzen, Gustav, 3,868,133.
Palmer, James L.: *See—*
Blackham, Angus U.; and Palmer, James L., 3,868,333.
Palmieri, Angelo: *See—*
Billi, Agostino; and Palmieri, Angelo, 3,868,009.
Pandiscio, Nicholas A.: *See—*
Mlavsky, Abraham I.; and Pandiscio, Nicholas A., 3,868,228.
Panitz, John A., to United States of America, Atomic Energy Commission. Field desorption spectrometer. 3,868,507, Cl. 250-287.000.
Papaconstantinou, Elias: *See—*
Sykes, Donald J.; Papaconstantinou, Elias; and Murski, Kenneth, 3,868,485.
Paper Converting Machine Company: *See—*
Nystrand, Ernst Daniel, 3,867,872.
Pappo, Raphael; and Collins, Paul W., to G. D. Searle & Co. 2-(4-Hydroxy-1-alkynyl)-5-oxocyclopent-1-enealkanoic acids, 3-hydroxy congeners corresponding and derivatives thereof. 3,868,413, Cl. 260-514.00D.
Papst-Motoren KG: *See—*
Schlicker, Volker; and Wrobel, Gunter, 3,868,521.
Paris, Frank: *See—*
Fallon, William M.; Paris, Frank; and Bartenbach, Louis, 3,868,470.
Park, William R.: *See—*
Hart, Wallace F.; Hagemeyer, Hugh J., Jr.; and Park, William R., 3,868,422.
Parr, Edward L.; and Straza, George T., to Straza Enterprises Ltd. Rotary engine. 3,867,912, Cl. 123-8.410.
Parsons, Charles Henry; and Feldman, Jay Richard, to General Signal Corporation. System for monitoring chassis potential relative to a reference. 3,868,566, Cl. 324-51.000.
Parsons, Theron E., III; and Sheme, Francis J., to Eastman Kodak Company. Thermosetting polyester powder coating compositions. 3,868,338, Cl. 260-15.000.
Passmore, Edmund M.; and Castello, Eugene A., to GTE Sylvania Incorporated. Incandescent lamp having extended lamp life. 3,868,540, Cl. 315-73.000.
Patel, Arvind M.: *See—*
Hong, Se J.; and Patel, Arvind M., 3,868,632.
Patrusky, Bernard Eugene; and Mack, Alfred, to RCA Corporation. Trunk formatter. 3,868,481, Cl. 179-15.0BV
Patton, George H.: *See—*
Fasching, George E.; and Patton, George H., 3,868,509.
Paukert, Thomas T.; and Rosa, Eugene J., to Shell Oil Company. Opacity meter. 3,868,186, Cl. 356-207.000.
Paul Forkardt Kommanditgesellschaft: *See—*
Blattry, Hans; and Lindemann, Johann, 3,868,120.
Payne, Leslie E.: *See—*
Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., 3,868,289.
Peirce, Benjamin F., Jr. Wire guiding arrangement. 3,868,090, Cl. 254-134.30R.
Pelletier, Guy, to Rockland Industries Ltd. Apparatus for buffing worn tires. 3,867,792, Cl. 51-33.00W.
Pennington, Harold W.; and Ward, William H., to Clark Equipment Company. Method and means for assembling piston and piston rod. 3,868,192, Cl. 403-263.000.
Pennsylvania Engineering Corporation: *See—*
Schempp, Eberhard G., 3,868,096.
Pepin, Armand. Electric space heating system. 3,868,494, Cl. 219-341.000.
Perkinson, Leon R.: *See—*
Moore, Francis C.; and Perkinson, Leon R., 3,867,939.
Permclip Products Corporation: *See—*
Corey, Joseph T., 3,867,743.
Perrino, Frank A., to Fairchild Camera and Instrument Corporation. Multi-layer connecting structures for packaging semiconductor devices mounted on a flexible carrier. 3,868,724, Cl. 357-65.000.
Pertsev, Viktor Vladimirovich: *See—*
Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich, 3,867,741.
Peterek, Manfred: *See—*
Klopfer, Anton Martin; Garbe, Siegfried; Frank, Gunter; and Peterek, Manfred, 3,868,523.
Peterson, John L.: *See—*
Mau, Theodore J., Jr.; and Peterson, John L., 3,868,673.
Petigara, Ramesh B.: *See—*
Yale, Harry Louis; and Petigara, Ramesh B., 3,868,374.
Petitpierre, Jean-Claude; and Weis, Claus, to Ciba-Geigy Corporation. Biocidal N-chloro-amidines. 3,868,419, Cl. 260-564.00R.
Pevar, Maxwell. Contour-conforming clamping device. 3,868,102, Cl. 269-26.000.
Pfeil, Hans Dieter: *See—*
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.
Pfenicher, Peter: *See—*
Nyffeler, Ernst; and Pfenicher, Peter, 3,867,869.
Pfenninger, Heinz; and Strietzel, Waldemar, to Contraves AG. Observation periscope which can be combined with a laser device. 3,868,169, Cl. 350-26.000.
Pharmacia Aktiebolag: *See—*
Ryde, Emma Marta; and Ekstedt, Jan Erik, 3,868,445.
Phentex Inc.: *See—*
Morissette, Bernard, 3,867,888.
Philadelphia Quartz Company: *See—*
Gericke, Clarence H.; and Pierce, Richard H., 3,868,227.
Philco-Ford Corporation: *See—*
Houghton, Norman F., 3,868,437.
Pierce, Richard H.: *See—*
Gericke, Clarence H.; and Pierce, Richard H., 3,868,227.
Pierlot, Michel Eugene, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Fuel feed devices for internal combustion engines. 3,867,913, Cl. 123-32.0EA.
Pighin, Albert; Creswell, Robert Alvin; and Malanka, Douglas Peter, to Bell Canada-Northern Electric Research Limited. Electrochemiluminescent device having a mixed solvent. 3,868,534, Cl. 313-483.000.
Pillsbury Company, The: *See—*
Decelles, George A.; and Larson, Violet M., 3,868,471.
Rodgers, Nelson E., 3,868,355.
Pincus, Lawrence J.: *See—*
Murgio, Joseph M.; Pincus, Lawrence J.; and Boehm, Guenter J., 3,868,480.
Pioneer Coveralls: *See—*
Bachand, Ernest C.; and Grise, Frederick G. J., 3,868,142.
Pipe Line Development Company, The: *See—*
Gardner, Ronald D., 3,867,964.
Piro, Mario, to Nuova San Giorgio S.p.A. Readout device for fabric patterns for the formation of corresponding electric pulses, on hosiery machines. 3,868,650, Cl. 340-173.00R.
Platt, Bruce W., to Richardson Lumber Company. Flat joist truss with rounded load-transfer surfaces. 3,867,803, Cl. 52-693.000.
Pocock, Frank William: *See—*
Simpson, Arthur William; and Pocock, Frank William, 3,867,873.
Podiak, Richard S.: *See—*
Eaton, Carl J.; and Podiak, Richard S., 3,868,530.
Polaroid Corporation: *See—*
Biber, Conrad H., 3,868,712.
Cutler, Norman W., Jr., 3,868,717.
Douglas, Lawrence M., 3,868,709.
Lippert, Irving S.; and Stella, Joseph A., 3,868,716.
Poley, Neil M.; and Whitaker, Howard L., to International Business Machines Corporation. Method of cleaning a glass substrate by ionic bombardment in a wet active gas. 3,868,271, Cl. 134-1.000.
Politzer, Eugene Jim. Spring type ball throwing device. 3,867,921, Cl. 124-26.000.
Polson, Jerry H., to Contel Corporation. Electrical isolation device and method. 3,868,600, Cl. 332-31.00R.
Polumbus, Gary M.: *See—*
Garner, David L., 3,867,738.
Ponticello, Ignazio S.: *See—*
Campbell, Gerald A.; Cohen, Hyman L.; Ling, Hans G.; and Ponticello, Ignazio S., 3,868,252.
Poole, Lynn Allen, to United States of America, Navy. Adaptable notch filter. 3,868,605, Cl. 333-76.000.
Popp, Walter: *See—*
Sabel, Alex; and Popp, Walter, 3,868,347.
Popplewell, James M.: *See—*
Pryor, Michael J.; and Popplewell, James M., 3,867,799.
Porta-Kool, Inc.: *See—*
Hartman, Jack; Leard, Joe W.; and Sharp, James L., 3,867,819.
Portland Wire & Iron Works: *See—*
Moore, James C., 3,868,190.
Post, Melvin J.; and McCarthy, James L. Rotatable recorder scale arrangement. 3,868,696, Cl. 346-17.000.
Post Office, The: *See—*
Bolton, Leslie John; and Hall, Brian, 3,868,484.
Potter, Douglas John. Identification tag for animals and/or an applicator for identification tags. 3,867,777, Cl. 40-301.000.
Povlacs, Lawrence J., to Akwell Industries Incorporated. Surgeon's glove. 3,867,727, Cl. 2-167.000.
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., to Celanese Corporation. Permanent press fabric resin and processes therefor. 3,868,349, Cl. 260-67.700.
Preda, Giuliano; and Marchi, Romolo. Automatic choke for hunting rifles. 3,867,778, Cl. 42-79.000.
Prener, Jerome S.; and Lubowski, Stanley J., to General Electric Company. Composite input screen for X-ray imaging devices. 3,868,512, Cl. 250-483.000.
Prentex: *See—*
Van de Gent, Edouard Louis, 3,867,876.
Priest, Lyle Gilbert, to Information Design, Inc. Tape clamp mechanism for microfilm reader. 3,868,180, Cl. 353-95.000.
Proffitt, Thomas Jefferson, Jr., to du Pont de Nemours, E. I., and Company. Fibers with finish containing organic phosphates and sulphates. 3,868,270, Cl. 117-139.5CQ.
Prometall Uznach AG: *See—*
Fux, Kamil, 3,868,323.
Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Architectural products formed of glass or ceramic-to-metal composites. 3,867,799, Cl. 52-235.000.
Pugh, Charles D., to Burlington Industries, Inc. Control mechanism for producing random-like effects on textile materials. 3,868,496, Cl. 235-92.0PE.
Pullman Incorporated: *See—*
Marulic, Walter J.; and Ferris, Ray L., 3,868,127.
Purkhardt, Cesar: *See—*
Pageot, Jacques; Roy, Yvon; and Purkhardt, Cesar, 3,868,103.

Purtell, Rufus J., to Tri-Matic Inc. Surge control. 3,868,198, Cl. 417-53.000.

Quakenbush, Howard M., to Flexsteel Industries, Inc. Swivel pedestal for seats. 3,868,084, Cl. 248-418.000.

Quaker Oats Company, The: *See—*
Carveth, Peter C., 3,868,017.

R. J. Reynolds Tobacco Company: *See—*
Beard, Hoyt S.; Payne, Leslie E.; and McArthur, Colin S., 3,868,289.

Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. N-benzhydryl-N'-p-hydroxybenzyl-piperazines and processes for their manufacture. 3,868,377, Cl. 260-268.0BZ.

Racine, William H. Quick mount fitting. 3,868,132, Cl. 285-312.000.

Radcliffe, Remington, to Schick Incorporated. Hygienic syringe. 3,867,938, Cl. 128-225.000.

Radke, Donald G.; and Lewis, Donald J., to Allied Chemical Corporation. Plural inflation for safety device. 3,868,126, Cl. 280-150.0AB.

Ramacciotti, Aldo, to Centro Sperimentale Metallurgico S.p.A. Steel production in an upright rotating vessel. 3,868,247, Cl. 75-60.000.

Rank Xerox, Ltd.: *See—*
Hirasaki, Takashi; and Suga, Gojiro, 3,868,599.

Ray, Brian, to Wilkinson Sword Limited. Smoke detecting apparatus with multiple detectors connected to coincidence circuit. 3,868,663, Cl. 340-237.00S.

Raymond Lee Organization, Inc., The: *See—*
Bentley, Arch N., 3,868,085.
MacLeod, Ivan R., 3,867,854.

Raytheon Company: *See—*
Cornwell, Gerald M.; and Streeton, William M., Jr., 3,868,594.

RCA Corporation: *See—*
Goldman, Leman, Jr.; and Dunn, Ted E., 3,868,687.
Haferl, Peter Eduard, 3,868,537.
Haferl, Peter Eduard, 3,868,582.
Patrusky, Bernard Eugene; and Mack, Alfred, 3,868,481.
Schwartzmann, Alfred; Mikenas, Vitas Anthony; Thomas, John Jerome; and Chang, Kern Konan, 3,868,588.
Scott, Philip Romeo, Jr., 3,868,557.

Reeves, Charles F. Apparatus for mounting camper bodies and the like. 3,868,088, Cl. 254-49.000.

Reeves, Wilson A.: *See—*
Daigle, Donald J.; Reeves, Wilson A.; and Drake, George L., Jr., 3,868,269.

Reiff, Helmut; Witt, Harro; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Thermoplastic polyurethane polyurea powders. 3,868,350, Cl. 260-77.50Q.

Reilly, Mason J., to United States of America, Navy. Crash load attenuating troop seat. 3,868,143, Cl. 297-216.000.

Reinke, Friedhelm; and Stengel, Edgar, to AEG-Elotherm GmbH. Arrangement for raising and lowering or retaining the inductor in its upper most position in equipment. 3,867,847, Cl. 74-55.000.

Reiser, Alfred A. Unbalance detector. 3,867,842, Cl. 73-480.000.

Reister, Richard A.: *See—*
O'Nory, Joseph; and Reister, Richard A., 3,868,670.

Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Desnoyers, Pierre, 3,868,411.

Remy, David C. Method of treating arrhythmia. 3,868,463, Cl. 424-330.000.

Rendina, John F.: *See—*
Aaronson, Charles D.; Rendina, John F.; and Fancy, Robert D., 3,868,499.

Repco Products Corporation: *See—*
Bunten, Theodore M., 3,868,474.

Repke, Virginia L.: *See—*
Mesek, Frederick K.; and Repke, Virginia L., 3,867,940.

Ressorts du Nord S.A.: *See—*
Lemaire, Bernard J., 3,868,212.

Reuter, Peter; and Friedrichsen, Wilhelm, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of carboxylic acids of their anhydrides. 3,868,393, Cl. 260-346.400.

Revankar, Ganapathi R.: *See—*
Tolman, Richard L.; and Revankar, Ganapathi R., 3,868,361.

Rhodes, Melvin H., to Rockwell International Corporation. Analog-to-digital converter apparatus. 3,868,680, Cl. 340-347.0SY.

Rhone-Poulenc S.A.: *See—*
Giraudon, Raymond, 3,868,382.
Magne, Robert, 3,868,342.
Mourier, Emile, 3,868,424.

Rich, John Theodore, to Imperial Chemical Industries Limited. Process for the continuous polymerisation of polyamides. 3,868,352, Cl. 260-78.00R.

Richard, Leo P.: *See—*
Lechaton, John S.; Richard, Leo P.; and Smith, Daryl C., 3,868,723.

Richardson Lumber Company: *See—*
Platt, Bruce W., 3,867,803.

Richmond, Charles B. Automatic crossfading device. 3,868,585, Cl. 330-124.00R.

Riendeau, William P., to Aiken Industries, Incorporated. Improved circuit breaker trip mechanism. 3,868,614, Cl. 337-66.000.

Rigaku Denki Company Limited: *See—*
Ogiso, Katsuhiko, 3,868,506.

Riggi, Stephen Joseph: *See—*
Albright, Jay Donald; Riggi, Stephen Joseph; and Shepherd, Robert Gordon, 3,868,416.

Ritter, Klaus; and Gott, Hans, to Evg Enlwick-lungs-u Verwertungsgesellschaft, Firma. Apparatus for binding mesh mats in stacks. 3,867,968, Cl. 140-93.00D.

Robbins & Myers, Inc.: *See—*
Monroe, Thomas D., 3,867,981.

Roberts, James Earl: *See—*
Suarez, Francis Sardovia; Mankins, William Lawrence; and Roberts, James Earl, 3,867,976.

Robillard, Edward G., to Cincinnati Milacron-Heald Corporation. Grinding machine. 3,867,794, Cl. 51-165.770.

Robinson, Gerard A. Rotary filing cabinet. 3,868,157, Cl. 312-305.000.

Robock, Klaus; Teichert, Ullrich; and Munder, Paul Gerhard, to Bergwerksverband GmbH. Measuring device for measuring the oxygen consumption of biological substances. 3,868,223, Cl. 23-253.00R.

Robra, Helmut; and Schmoll, Heinz, to Schloemann Aktiengesellschaft. Forging press having adjustable column guides. 3,867,834, Cl. 72-456.000.

Robson, Harry E., to Exxon Research and Engineering Company. Process for cracking hydrocarbons with chrysotile catalyst compositions. 3,868,316, Cl. 208-119.000.

Rocchia, Peter A.; and Steffy, Robert M., to Wicker Works, The. Method of furniture manufacture. 3,867,967, Cl. 139-424.000.

Rock Fall Company Limited: *See—*
Duff, John Sweton, 3,867,867.

Rockefeller, Winston G. Moist tissue dispensing. 3,868,052, Cl. 225-106.000.

Rockland Industries Ltd.: *See—*
Pelletier, Guy, 3,867,792.

Rockwell International Corporation: *See—*
Koehler, Heinrich P., 3,867,988.
Rhodes, Melvin H., 3,868,680.
Williford, Jerry G., 3,868,596.

Rod, Trygve R.: *See—*
Ernst, Richard J.; and Rod, Trygve R., 3,868,292.

Rodgers, Nelson E., to Pillsbury Company, The. Foam separation of gluten and starch. 3,868,355, Cl. 260-112.00G.

Rodriguez, Manuel: *See—*
Agee, Robert B.; and Rodriguez, Manuel, 3,868,441.

Roffel, Derk: *See—*
Van Kleef, Alfred L.; Roffel, Derk; and Van Vollenhoven, Frits W., 3,868,310.

Rogers, Dow A., Jr.; and Smith, James D. B., to Westinghouse Electric Corporation. Solventless epoxy resin composition and an electrical member impregnated therewith. 3,868,613, Cl. 336-206.000.

Rogers, John K.: *See—*
Hider, Shibley A.; Rogers, John K.; and Wilkins, Colbert W., 3,868,320.

Rollei-Werke Franke & Heidecke: *See—*
Strauss, Karl-Peter; and Weiss, Richard, 3,868,702.

Romashko, Nikolai Ivanovich: *See—*
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stepanovich; and Deryabkin, Viktor Ilich, 3,867,831.

Romberg, Hendrik: *See—*
Buurman, Herman; and Romberg, Hendrik, 3,868,240.

Rosa, Eugene J.: *See—*
Paukert, Thomas T.; and Rosa, Eugene J., 3,868,186.

Rosenfeld, Jack B.: *See—*
Kaufman, Rubin P.; Rosenfeld, Jack B.; and Schiller, Elaine, 3,868,572.

Ross, Edward A.: *See—*
Banyas, John D.; and Ross, Edward A., 3,868,010.

Rossi, Pietro Paolo: *See—*
Siclari, Francesco; and Rossi, Pietro Paolo, 3,868,392.

Rothmans of Pall Mall Canada Limited: *See—*
Brackmann, Warren A.; and Dicianni, Daniel, 3,868,013.

Rothschild, Henry, to Caddy Corporation of America. Mold for forming dispensing containers. 3,868,087, Cl. 249-137.000.

Roussel UCLAF: *See—*
Martel, Jacques; and Toromanoff, Edmond, 3,868,402.

Rowland, Stanley P.: *See—*
Franklin, William E.; Rowland, Stanley P.; and Madacsi, John P., 3,868,216.

Roy, Yvon: *See—*
Pageot, Jacques; Roy, Yvon; and Purkhardt, Cesar, 3,868,103.

Rubbermaid Commercial Products, Inc.: *See—*
Berg, Donald P.; Bochmann, Carl E.; and Brescia, Anthony J., 3,868,123.

Rubin, Howard: *See—*
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,259.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,260.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,339.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,340.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,432.

Rubtsov, Valery Dmitrievich: *See—*
Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich, 3,867,741.

Rudelick, John, to Calgon Corporation. Control valve for water conditioners. 3,867,961, Cl. 137-625.290.

Russell, Donald W.: *See—*
Shah, Mahendra B.; Russell, Donald W.; and Bowman, Harold L., 3,868,635.

Russell, Levi, Jr. Mobile home anchor strand tension indicator. 3,868,662, Cl. 340-213.00R.

Rut, Tadeusz. Method of forging of various shaped elements on elongated bars and a device for the use of this method. 3,867,832, Cl. 72-399.000.

Ryan, John W.; Kennedy, Melvin R.; and Marshall, James E., to Mattel, Inc. Object identifying doll. 3,867,785, Cl. 46-117.000.

Ryde, Emma Marta; and Ekstedt, Jan Erik, to Pharmacia Aktiebolag. Dosage unit containing a substance showing a topical effect on the eye, and a method of preparing same. 3,868,445, Cl. 424-14.000.

S & C Electric Company: *See—*
Dragon, James W.; and Sakats, Gerald, 3,868,617.

S.S.S. Patents Limited: *See—*
Clements, Herbert Arthur; and Heybourne, Robert Howard, 3,868,004.

Sabel, Alex; and Popp, Walter, to Wacker-Chemie GmbH. Process for the production of polyvinyl chloride-coated silicate-containing materials. 3,868,347, Cl. 260-42.150.

Sachs, Harold, to Siemens Aktiengesellschaft. Hierrarchial associative memory system. 3,868,642, Cl. 340-172.500.

Safety Laboratories, Inc.: *See—*
Tidd, Arthus H., 3,868,225.

Saholt, Orville J.; and Stoehr, Donald, to United States of America, Navy. Rocket-thrown missile. 3,867,893, Cl. 114-20.00R.

Saidel, William R. Pallet structure and method of forming the same. 3,867,887, Cl. 108-55.000.

Saiki, Noritsugu: *See—*
Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, 3,868,375.

Saito, Kazuyoshi: *See—*
Matsumoto, Shoichi; and Saito, Kazuyoshi, 3,868,251.

Sakai, Tomoharu; and Matsui, Kaname, to Sumitomo Metal Industries, Ltd. Method of manufacturing coated steel pipes. 3,868,265, Cl. 117-18.000.

Sakats, Gerald: *See—*
Dragon, James W.; and Sakats, Gerald, 3,868,617.

Sakurai, Yasuhiko. Device for indicating disconnection of automobile lamps. 3,868,628, Cl. 340-80.000.

Sakurai, Yoshitoshi; and Ohata, Satoru, to Honda Giken Kogyo Kabushiki Kaisha. Heated induction system for internal combustion engines. 3,867,915, Cl. 123-75.00B.

Salam, Hassan Paddy Abdel, to Universal Telewriters (UK) Limited. Selective electrical switching means. 3,868,610, Cl. 335-112.000.

Salottica S.r.l.: *See—*
Fedon, Vigilio; and Di Vallesella, Frazione, 3,868,438.

Saltzinger, Gerhard: *See—*
Herrmann, Wolfgang Dieter; Stoss, Peter Johannes; and Saltzinger, Gerhard, 3,868,418.

Samcoe Holding Corporation: *See—*
Frezza, Robert, 3,868,215.

Sampson, Peter: *See—*
Morgan, David L.; and Sampson, Peter, 3,868,081.

Samuels, Peter B., to Wood, Ernest C.; and Le Vaux, Rene G. Hemostatic clip and applicator therefor. 3,867,944, Cl. 128-325.000.

Sanchez, Robert A.; and Fuller, William D. Process for the preparation of 4-carboxamido-5-cyano-2-imidazolone. 3,868,386, Cl. 260-309.600.

Sanders, Guy J., to Fair Company. High density sound transmission loss system. 3,867,995, Cl. 181-33.00G.

Sandoz Ltd.: *See—*
Evans, Frank; Frey, Walter; Stacheli, Joerg; and Toth, Istvan, 3,868,420.

Sandoz-Wander, Inc.: *See—*
Hardtmann, Goetz E., 3,868,372.
Houlihan, William J.; and Nadelson, Jeffrey, 3,868,390.

Sargent, William H.: *See—*
Fisher, Philip D.; and Sargent, William H., 3,868,125.

Sasaki, Tetsuya: *See—*
Mikami, Yuzo; Kobayashi, Hideyuki; and Sasaki, Tetsuya, 3,867,805.

Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, to Fuji Photo Film Co., Ltd. Fogged, direct-positive silver halide emulsion containing a cyanine dye having a pyrazole[5,1b quinazolone nucleus. 3,868,256, Cl. 96-100.000.

Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, to Fujitsu Limited. Microprogram control system. 3,868,649, Cl. 340-172.500.

Sato, Tadashi: *See—*
Okada, Hisao; and Sato, Tadashi, 3,868,639.

Sato, Tsuneo: *See—*
Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, 3,868,450.

Sauer, Earl Salvator; and Vesperman, William Charles, to Western Electric Company, Incorporated. Clear flame retardant composition. 3,868,341, Cl. 260-23.0XA.

Savchenko, Anatoly Vladimirovich: *See—*
Shulika, Valery Petrovich; Khazhinsky, Jury Nikolaevich; Yakimenko, Jury Fedorovich; and Savchenko, Anatoly Vladimirovich, 3,868,213.

Scanner, Inc.: *See—*
Dolch, Volker, 3,868,634.

Schack, Colin B. Amniotomy glove. 3,867,947, Cl. 128-361.000.

Schaefer, Edward J.; and Streater, August L., to Franklin Electric Co., Inc. Circuit for protecting contacts against damage from arcing. 3,868,549, Cl. 317-11.00E.

Schaefer Marine Products: *See—*
Merry, Carl Alan, 3,867,896.

Schaefer, Wolfgang: *See—*
Koch, Hans Joachim; and Schaefer, Wolfgang, 3,867,756.

Schefe, Harry. Temperature recorder. 3,868,697, Cl. 346-68.000.

Scheibler, Erich; and Volker, Hans-Joachim, to Friedrich Uhde GmbH. Process for the manufacture of nitric acid. 3,868,443, Cl. 423-392.000.

Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Tuyere support means for metallurgical vessels. 3,868,096, Cl. 266-35.000.

Schenker, Karl: *See—*
Beck, Dieter; Bernasconi, Raymond; Schenker, Karl; and Wilhelm, Max, 3,868,421.

Scheyer, Stuart R., to Condecor Incorporated. Method of making composite three dimensional picture. 3,868,283, Cl. 156-58.000.

Schick Incorporated: *See—*
Radcliffe, Remington, 3,867,938.

Schiller, Elaine: *See—*
Kaufman, Rubin P.; Rosenfeld, Jack B.; and Schiller, Elaine, 3,868,572.

Schiller, Michael S. Document retrieval system. 3,868,637, Cl. 340-146.30F.

Schlang, Arthur, to Isotec Incorporated. Optical character reader having feature recognition capability. 3,868,636, Cl. 340-146.30J.

Schlicker, Volker; and Wrobel, Gunter, to Papst-Motoren KG. Tachometer generator. 3,868,521, Cl. 310-257.000.

Schloemann Aktiengesellschaft: *See—*
Robra, Helmut; and Schmoll, Heinz, 3,867,834.

Schlumberger Technology Corporation: *See—*
Jacobson, Larry A.; Wall, Warren B.; and Johnstone, Charles Wilkin, 3,868,505.

Schlunke, Jurgen; and Boixen, Heinz, to Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung. Hoisting arrangement for rollers. 3,867,879, Cl. 100-162.000.

Schluter, Richard C.: *See—*
Ford, Douglas M.; and Schluter, Richard C., 3,868,116.

Schmidt, Donald R.: *See—*
Van Gilder, James F.; and Schmidt, Donald R., 3,868,327.

Schmidt, Herbert: *See—*
Kent, Francis J.; and Schmidt, Herbert, 3,867,828.

Schmidt, Walter: *See—*
Becker, Hans-Joachim; Dierichs, Helmut; and Schmidt, Walter, 3,868,403.

Schmoll, Heinz: *See—*
Robra, Helmut; and Schmoll, Heinz, 3,867,834.

Schneider, Harvey R.: *See—*
Bigham, Clifford B.; and Schneider, Harvey R., 3,868,522.

Schneider, Theodore S. Torque energy converter and storage device. 3,867,814, Cl. 60-413.000.

Schnuell, Henry A., to E. R. Wagner Manufacturing Company. Hinge for cover lid on chests. 3,867,739, Cl. 16-190.000.

Schoeff, John A., to Motorola, Inc. Low hysteresis threshold detector having controlled output slew rate. 3,868,517, Cl. 307-235.00R.

Schoenfield, Palmer J.: *See—*
Glass, Marvin I.; and Schoenfield, Palmer J., 3,868,177.

Scholtholt, Josef: *See—*
Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, 3,868,377.

Schopf, Hans-Joachim, to Daimler-Benz Aktiengesellschaft. Fixed or rotatable structural part consisting of an inner and of an outer part. 3,867,852, Cl. 74-446.000.

Schott, Donald E., to Thomas C. Wilson, Inc. Collar. 3,868,193, Cl. 403-344.000.

Schow, Harvey B.; and Abrams, Macy L. Arc welding simulator trainer. 3,867,769, Cl. 35-13.000.

Schrade, Jean, to Swiss Aluminium Ltd. Compound panel. 3,868,298, Cl. 161-161.000.

Schraven, Eckhard: *See—*
Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, 3,868,377.

Schreiber, William F., to Massachusetts Institute of Technology. Electro-optical communication of visual images. 3,868,167, Cl. 350-7.000.

Schreuder, Thomas: *See—*
Van De Kraats, Eduard J.; Buitelaar, Arnold A.; and Schreuder, Thomas, 3,868,231.

Schroder, Johann: *See—*
Kaver, Erhard; Schroder, Johann; and Horster, Horst, 3,868,159.

Schroder, Rolf: *See—*
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, 3,868,708.

Schuelke, Edgar Allan. Platform miniature golf game. 3,868,111, Cl. 273-87.00C.

Schuil, Roelof Egbert, to U.S. Philips Corporation. Cathode-ray tube for image display. 3,868,533, Cl. 313-468.000.

Schulte, Horst: *See—*
Striepens, Heinz; and Schulte, Horst, 3,867,825.

Schultz, George E., to Tangen Drives, Inc. Trunnion bearing feeder. 3,868,148, Cl. 302-2.00R.

Schulz, William J., to AMP Incorporated. Dereeling apparatus. 3,868,069, Cl. 242-128.000.

Schwalm, Arthur W.; and Anderson, Jon A., to Cardiac Pacemakers, Inc. Cardiac pacer with voltage doubler output circuit. 3,867,949, Cl. 128-419.00P.

Schwartz, Boris. Flexible protective sheath for catheter. 3,867,937, Cl. 128-221.000.

Schwartz, Martin L.: *See—*
Zinnes, Harold; Schwartz, Martin L.; Lindo, Neil A.; and Shavel, John, Jr., 3,868,367.

Schwartzmann, Alfred; Mikenas, Vitas Anthony; Thomas, John Jerome; and Chang, Kern Konan, to RCA Corporation. Microwave oscillator or amplifier using parametric enhanced trapatt circuits. 3,868,588, Cl. 331-77.000.

Schwarz, Gerhard; Lutz, Walter; and Lang, Rudolf. Photographic exposure setting means. 3,868,713, Cl. 354-231.000.

Schwee, Leonard J., to United States of America, Navy. Serial access memory using thin magnetic films. 3,868,659, Cl. 340-174.0TF.

Schwee, Leonard J., to United States of America, Navy. Detector for cross-tie memory. 3,868,660, Cl. 340-174.0TF.

Schweitzer, Edmund O., Jr. Tool for manual manipulation of devices for application to and removal from high voltage conductors. 3,868,136, Cl. 294-19.00R.

Schweitzer, John C.; and Tuttle, Terry E., to Delta Products, Inc. Telephonic alarm reporting apparatus. 3,868,479, Cl. 179-5.00R.

Schweppe, Joseph L.: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; and Schweppe, Joseph L., 3,867,882.

Schwertner, Gary T.; and Zajaczkowski, Russell W. Adjustable reusable tubing end fitting. 3,868,130, Cl. 285-243.000.

Scott, Ian John; and Tessier, Froie Edwin, to Gilbarco Aust. Ltd. Air and/or vapour separation device. 3,867,955, Cl. 137-179.000.

Scott Paper Company: *See—*
Lewyckyj, Roman, 3,868,287.

Scott, Philip Romeo, Jr., to RCA Corporation. Motion damping apparatus. 3,868,557, Cl. 318-685.000.

Sea-Land Service, Inc.: *See—*
Bodenheimer, Bert A., 3,868,042.

Seaberg, David H., to J. I. Case Company. Vibratory bulldozer blade. 3,867,987, Cl. 172-40.000.

Sealed Air Corporation: *See—*
Keren, Eitan, 3,868,056.

Seiko Koki Kabushiki Kaisha: *See—*
Katai, Kiyoshi, 3,868,705.

Sekida, Minoru; and Ohba, Masaru, to Minolta Camera Kabushiki Kaisha. Photographic camera having a detachably mounted view finder casing. 3,868,711, Cl. 354-219.000.

Sekido, Mamoru: *See—*
Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, 3,868,257.

Selph, Kristin Mills. Reusable glare eliminator patch. 3,868,293, Cl. 161-1.000.

Seng, Florin: *See—*
Ley, Kurt; Seng, Florin; and Metzger, Karl George, 3,868,371.

Sessler, John G.; and Weiss, Volker, to United States of America, Navy. Crack detection apparatus and method. 3,867,836, Cl. 73-67.50R.

Sethco Manufacturing Corporation: *See—*
Otto, Walter, 3,868,325.

Shackleton, Alan Lomas, to Ashfield Dyeing & Finishing Company Limited. Process for producing decorated fabrics. 3,868,214, Cl. 8-2.500.

Shah, Mahendra B.; Russell, Donald W.; and Bowman, Harold L., to Optical Recognition Systems. Feature enhancement character recognition system. 3,868,635, Cl. 340-146.3MA.

Shang, David C. T.: *See—*
Cooper, Lawrence; Ii, Lawrence B.; and Shang, David C. T., 3,868,652.
Ii, Lawrence B.; and Shang, David C. T., 3,868,172.

Shannon, Thomas D.: *See—*
Miles, John R.; and Miles, Grant M., 3,868,173.

Sharp, James L.: *See—*
Hartman, Jack; Leard, Joe W.; and Sharp, James L., 3,867,819.

Sharpe, Andrew Jackson, Jr.: *See—*
Boothe, Jerry Emile; Martin, Fred David; and Sharpe, Andrew Jackson, Jr., 3,868,328.

Shatz, Malcolm H.; and Leon, Edward, to Hooker Chemicals & Plastics Corporation. Process for treating metal articles. 3,868,276, Cl. 148-6.15R.

Shavel, John, Jr.: *See—*
Zinnes, Harold; Schwartz, Martin L.; Lindo, Neil A.; and Shavel, John, Jr., 3,868,367.

Shell Oil Company: *See—*
Paukert, Thomas T.; and Rosa, Eugene J., 3,868,186.
Simpson, Samuel W.; and Innocenzi, Thomas E., 3,868,210.
Van De Kraats, Eduard J.; Buitelaar, Arnold A.; and Schreuder, Thomas, 3,868,231.
Van Kleef, Alfred L.; Roffel, Derk; and Van Vollenhoven, Frits W., 3,868,310.
Van Lookeren Campagne, Nicolaas, 3,868,331.

Sheme, Francis J.: *See—*
Parsons, Theron E., III; and Sheme, Francis J., 3,868,338.

Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. Tetrahydrofluorene carboxylic acids and related compounds. 3,868,414, Cl. 260-515.00A.

Shepherd, Robert Gordon: *See—*
Albright, Jay Donald; Riggi, Stephen Joseph; and Shepherd, Robert Gordon, 3,868,416.

Sheppard, Chester Stephen; and MacLeay, Ronald Edward. Symmetrical trisazo sequential free radical initiators having two different azo functions. 3,868,359, Cl. 260-173.000.

Shering Corporation: *See—*
Daniels, Peter J. L.; and Weinstein, Jay, 3,868,360.

Shiba, Keisuke: *See—*
Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, 3,868,256.

Shimizu Construction Co., Ltd., The: *See—*
Otsuki, Tadao; Tsuboi, Tokishige; Sudo, Masashi; and Matsuda, Hidefumi, 3,868,207.

Shimizu, Tetsuji; and Kato, Tatsuo, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Acceleration sensor. 3,867,844, Cl. 73-517.00R.

Shimohigashi, Katsuhiro: *See—*
Itoh, Kiyoo; Shimohigashi, Katsuhiro; and Hashizume, Keisuke, 3,868,654.

Shimoura, Yoshiyuki; Konishi, Hideo; and Sonoda, Hirotetsu, to Jidosha Kiki Co., Ltd. Control valve reaction device for a power steering system. 3,867,870, Cl. 91-372.000.

Shimp, Everett M.: *See—*
Healey, Robert A.; and Shimp, Everett M., 3,868,644.

Shinoki, Takanori: *See—*
Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, 3,868,375.

Shirley Aldred & Co. Ltd.: *See—*
Kelley, Donald Walter, 3,867,936.

Shoemaker, Arthur H., to American Optical Corporation. Forty power microscope objective. 3,868,175, Cl. 350-225.000.

Sholtes, Carl E., to Westinghouse Electric Corporation. Cabinet for a water cooler. 3,868,153, Cl. 312-236.000.

Shomura, Takashi: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Shore, Daniel B., to International Harvester Company. Piston-to-rod detachable connection. 3,867,871, Cl. 92-258.000.

Shulika, Valery Petrovich; Khazhinsky, Jury Nikolaevich; Yakimenko, Jury Fedorovich; and Savchenko, Anatoly Vladimirovich. Vibration furnace. 3,868,213, Cl. 432-134.000.

Sielari, Francesco; and Rossi, Pietro Paolo, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Method and apparatus for the production of peroxide derivatives of high purity ozonides, by ozonization of the corresponding olefins, and subsequent treatments. 3,868,392, Cl. 260-340.300.

Siddall, John B., to Zoecon Corporation. P-alkenyloxybenzoic acid esters useful for the control of insects. 3,868,406, Cl. 260-473.00R.

Siebert, Cletus J. Lever actuated ratchet wrench. 3,867,855, Cl. 81-63.100.

Siefker, Robert G., to United States of America, Air Force. Method of manufacturing a multi-layered strip transmission line printed circuit board integrated package. 3,867,759, Cl. 29-628.000.

Siemens Aktiengesellschaft: *See—*
Kiemle, Horst, 3,868,658.
Sachs, Harold, 3,868,642.
Stein, Karl-Ulrich; and Goser, Karl, 3,868,656.

Sih, Charles J., to Wisconsin Alumni Research Foundation. Method for preparing 3(s or r)-hydroxy-1-iodo-1-trans-octene. 3,868,306, Cl. 195-51.00R.

Simon, Joseph; Ingrain, Raymond; and Jourdan, Charles, to La Telemecanique Electrique. Light column having stacked elements. 3,868,682, Cl. 340-366.00R.

Simpson, Arthur William; and Pocock, Frank William, to Spacials Limited. Bag forming machines. 3,867,873, Cl. 93-33.00H.

Simpson, Roger J. Quick change fishing float. 3,867,783, Cl. 43-44.910.

Simpson, Samuel W.; and Innocenzi, Thomas E., to Shell Oil Company. Safety flare. 3,868,210, Cl. 431-4.000.

Singer Company, The: *See—*
Ciecior, Heinrich; and Kessler, Rolf E., 3,867,892.

Singleton, Norman R., to Westinghouse Electric Corporation. Thermal shield of a nuclear reactor. 3,868,302, Cl. 176-87.000.

Sioui, Richard H.; and Cohen, Harvey M., to Norton Company. Resin-bonded abrasive tools with molybdenum metal filler and molybdenum disulfide lubricant. 3,868,232, Cl. 51-298.000.

Sioui, Richard H.: *See—*
Carver, Edgar B.; and Sioui, Richard H., 3,868,233.

Skibe, Andrew D.: *See—*
Fariss, Robert H.; and Skibo, Andrew D., 3,868,286.

Skujins, Romans, Jr., to United States of America, Army. Intruder detection system embodying a bimorph transducer. 3,868,667, Cl. 340-272.000.

Skyway Sales Corporation: *See—*
Van Gilder, James F.; and Schmidt, Donald R., 3,868,327.

Slaker, Frank A., to Outboard Marine Corporation. Core processing machine. 3,868,063, Cl. 241-101.700.

Slavin, James A., to Noltac Corporation. System for chemical processing. 3,868,715, Cl. 354-298.000.

Slusarchyk, William A.: *See—*
Dolfini, Joseph Edward; Slusarchyk, William A.; and Koster, William Henry, 3,868,365.

Smit, James A.: *See—*
Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H., 3,868,353.

Smith, Daryl C.: *See—*
Lechaton, John S.; Richard, Leo P.; and Smith, Daryl C., 3,868,723.

Smith, James D. B.: *See*—
Rogers, Dow A., Jr.; and Smith, James D. B., 3,868,613.
Smith, James Lanson: *See*—
Bonyhard, Peter Istvan; Chen, Yu-Ssu; and Smith, James Lanson, 3,868,661.
Smith, Kenneth, to Joshua Shaw & Sons Limited. Brake actuated return to neutral mechanism. 3,868,003, Cl. 192-4.00B.
Smith, Kent F.: *See*—
Hubar, Robert J.; Smith, Kent F.; Fordemwalt, James N.; and Hanson, John W., 3,868,274.
Smith Kline & French Laboratories Limited: *See*—
Black, James Whyte; Durant, Graham John; Emmeti, John Colin; and Ganellin, Charon Robin, 3,868,457.
Smith, Leward N. Method of excavating to form or enlarge a waterway. 3,867,772, Cl. 37-195.000.
Smith, Merritt B.: *See*—
Van Lanen, James M., deceased; Smith, Merritt B.; and Maisch, Weldon F., 3,868,307.
Smith, Philip John: *See*—
Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.
Smith, William E., to General Electric Company. Process for making 4-butyrolactone. 3,868,370, Cl. 260-343.600.
SmithKline Corporation: *See*—
Berges, David Alan, 3,868,369.
Smyth, Derek George, to National Research Development Corporation. N-Acylated, O-substituted insulin derivatives. 3,868,356, Cl. 260-112.700.
Smyth, Derek George; and Ko, Arthur Sai Chun, to National Research Development Corporation. Alkanedioic acid derivatives of insulin. 3,868,357, Cl. 260-112.700.
Snell, Spencer A., to International Business Machines Corporation. Article conveying. 3,868,045, Cl. 221-194.000.
Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A.: *See*—
Siclari, Francesco; and Rossi, Pietro Paolo, 3,868,392.
Societa' Farmaceutici Italia: *See*—
Faustini, Remo; Tardani, Angelo; and Del Monte, Raffaele, 3,868,456.
Societa Italiana Resine S.p.A.: *See*—
Montanari, Fernando; Calcagno, Benedetto; and Conti, Luciano, 3,868,423.
Societe Anonyme Automobile Citroen: *See*—
Grosseau, Albert, 3,868,129.
Societe Anonyme Automobiles Citroen: *See*—
Durin, Michel, 3,868,311.
Societe Anonyme Cockerill-Ougree-Providence et esperance-Longdoz en Abrege Cockerill: *See*—
Leroy, Vincent Marguerite; and Liesenborghs, Roland Cesar Amand, 3,868,277.
Societe Anonyme dite: Ateliers Mecaniques du Douaisis: *See*—
Mahieu, Yves, 3,868,128.
Societe d'Etudes Techniques et d'Entreprises Generales (Sodeteg): *See*—
Laplume, Jacques, 3,868,476.
Societe en nom collectif Science Union et Cie, Societe Francaise de Recherche: *See*—
Vincent, Michel; Remond, Georges; and Desnoyers, Pierre, 3,868,411.
Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See*—
Carrasse, Jean; and Desbrosses, Denise, 3,867,979.
Societe Honeywell Bull (Societe Anonyme): *See*—
Laboue, Bernard Andre, 3,868,158.
Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See*—
Pierlot, Michel Eugene, 3,867,913.
Societe Nationale des Petroles d'Aquitaine: *See*—
Esclamadon, Christian, 3,868,459.
Society Superflexit: *See*—
Gros, Paul, 3,868,337.
Soderqvist, Anton, to LKB-Produkter AB. Device in a microtome for damping of vibrations. 3,868,082, Cl. 248-358.00R.
Sokolow, Nickolas N., to Beloit Corporation. Mixing screw and use thereof. 3,868,093, Cl. 259-191.000.
Sonnenberg, Darwin D. Propelling means for floor finishing machines. 3,867,796, Cl. 51-176.000.
Sonoda, Hirotetsu: *See*—
Shimoura, Yoshiyuki; Konishi, Hideo; and Sonoda, Hirotetsu, 3,867,870.
Sony Corporation: *See*—
Arai, Michio, 3,868,718.
Kitamura, Nobuo; and Fukagawa, Miroshi, 3,868,621.
Okada, Hisao; and Sato, Tadashi, 3,868,639.
Okada, Hisao; and Sato, Tadashi, 3,868,639.
Soodalter, Arnold. Apparatus for depositing a first food substance upon a second food product. 3,868,048, Cl. 222-380.000.
Spacials Limited: *See*—
Simpson, Arthur William; and Pocock, Frank William, 3,867,873.
Spary, Wilburn W., to Bryan, Thomas L.; and Bryan, Robert E., part interest to each. Polyphase circuit control system. 3,868,551, Cl. 317-23.000.
Spear, James B.: *See*—
Langmack, Holger C., Jr.; and Spear, James B., 3,868,040.
Spear, Richard M.; and Capuano, Louis M., to Westinghouse Electric Corporation. Closure system. 3,868,000, Cl. 187-52.000.
Speigner, Jack D.; and Thompson, Frank B., to United Aircraft Corporation. Surge indicator for turbine engines. 3,868,625, Cl. 340-27.0SS.
Spencer, Claude F.; and Alaimo, Robert J., to Morton-Norwich Products, Inc. Imadazo [4,5-f] quinolin-9-ols. 3,868,378, Cl. 260-289.00R.
Sphygmetrics, Inc.: *See*—
Friedlander, Sidney Lee, 3,867,926.
Sta-Tite Corporation: *See*—
Caron, Thomas E., 3,868,545.
Staeheli, Joerg: *See*—
Evans, Frank; Frey, Walter; Staeheli, Joerg; and Toth, Istvan, 3,868,420.
Stahl, Herbert A., to United States of America, Army. Stabilization of semiconductor photocathodes. 3,868,524, Cl. 313-94.000.
Stahl-Urban Company: *See*—
Conner, William R., Jr., 3,867,889.
Stanzel, Rudolf: *See*—
Bauer, Helmut; and Stanzel, Rudolf, 3,868,095.
Steelcase Inc.: *See*—
Bruins, Roger C., 3,868,020.
Steele, Daniel: *See*—
Langrish-Smith, Michael Anthony; and Steele, Daniel, 3,867,884.
Steffy, Robert M.: *See*—
Rocchia, Peter A.; and Steffy, Robert M., 3,867,967.
Stein, Herman Hal; and Darby, Thomas Dillard, to Abbott Laboratories. Adenosine-5'-esters in treating angina pectoris. 3,868,451, Cl. 424-180.000.
Stein, Karl-Ulrich; and Goser, Karl, to Siemens Aktiengesellschaft. Regenerating circuit for binary signals in the form of a keyed flip-flop. 3,868,656, Cl. 340-173.0DR.
Steingold, Harold. Television camera mount. 3,868,706, Cl. 354-95.000.
Steinmaier, Walter: *See*—
Le Can, Claude Jan Principe Frederic; and Steinmaier, Walter, 3,868,722.
Stella, Joseph A.: *See*—
Lippert, Irving S.; and Stella, Joseph A., 3,868,716.
Stemler, Orrin Arthur: *See*—
Cobb, Delwin Earl; Fidler, Jerry Dale; Gutman, Nathan; Livesay, Richard Edward; and Stemler, Orrin Arthur, 3,868,145.
Stemmle, Denis J., to Xerox Corporation. Tray apparatus. 3,868,019, Cl. 211-126.000.
Stengel, Edgar: *See*—
Reinke, Friedhelm; and Stengel, Edgar, 3,867,847.
Stengle, Edward J.; and Tillman, James J., to Owens-Illinois, Inc. Coated plastic substrates for coating compositions. 3,868,343, Cl. 260-29.40R.
Stoeckler, Hans A.: *See*—
McBride, Lyle E., Jr.; Bowman, William W.; Stoeckler, Hans A.; Hanson, Harold A.; and Gibola, Joseph J., 3,868,620.
Stoehr, Donald: *See*—
Saholt, Orville J.; and Stoehr, Donald, 3,867,893.
Stoffelen, Henricus Karel Jozef: *See*—
Beeren, Aloysius Jacobus Maria; and Stoffelen, Henricus Karel Jozef, 3,868,502.
Stohr, Arno. Article with spikes or bristles made of thermoplastics. 3,867,953, Cl. 132-39.000.
Stohr, Gunter: *See*—
Kratel, Gunter; Stohr, Gunter; Vogt, Georg; and Hechtl, Wolfgang, 3,868,345.
Stonner, Hans-Martin; Knoppe, Ulrich Von; Weisner, Paul; Kraus, Erhard; and Zigelsky, Fritz, to Metallgesellschaft AG. Settler for liquid-liquid extractors. 3,868,335, Cl. 210-522.000.
Stoss, Peter Johannes: *See*—
Herrmann, Wolfgang Dieter; Stoss, Peter Johannes; and Saltzinger, Gerhard, 3,868,418.
Straub, Edward C.: *See*—
Black, Gerall A.; and Straub, Edward C., 3,868,319.
Strauss, Karl-Peter; and Weiss, Richard, to Rollei-Werke Franke & Heidecke. Mirror reflex camera. 3,868,702, Cl. 354-42.000.
Straza Enterprises Ltd.: *See*—
Parr, Edward L.; and Straza, George T., 3,867,912.
Straza, George T.: *See*—
Parr, Edward L.; and Straza, George T., 3,867,912.
Streater, August L.: *See*—
Schaefer, Edward J.; and Streater, August L., 3,868,549.
Streel, Dominique Th.F.L.J.M.: *See*—
Donckel, George H.; and Streel, Dominique Th.F.L.J.M., 3,868,106.
Streeton, William M., Jr.: *See*—
Cornwell, Gerald M.; and Streeton, William M., Jr., 3,868,594.
Striepens, Heinz; and Schulte, Horst, to Vereinigte Drahtindustrie GmbH. Method and apparatus for cold forming rolled wire. 3,867,825, Cl. 72-161.000.
Strietzel, Waldemar: *See*—
Pfenninger, Heinz; and Strietzel, Waldemar, 3,868,169.
Strombeck, Per Albin, to AB Hagglund & Soner. Hoisting means for handling and lifting objects, such as timer stacked to form load units. 3,868,138, Cl. 294-74.000.
Strow, Donald A.: *See*—
Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, 3,868,324.
Stubstad, James A.; Urbaniak, James R.; and Kahn, Paul, to Cutter Laboratories, Inc. Prosthesis for spinal repair. 3,867,728, Cl. 3-1.000.

Styers, James D.; and Styers, Paul H. Strip label printer. 3,867,883, Cl. 101-125.000.
Styers, Paul H.: *See—*
Styers, James D.; and Styers, Paul H., 3,867,883.
Suarez, Francis Sardovia; Mankins, William Lawrence; and Roberts, James Earl, to International Nickel Company, Inc., The. Electroflux melting method and apparatus. 3,867,976, Cl. 164-52.000.
Sudo, Masashi: *See—*
Otsuki, Tadao; Tsuboi, Tokishige; Sudo, Masashi; and Matsuda, Hidefumi, 3,868,207.
Suga, Gojiro: *See—*
Hirasaki, Takashi; and Suga, Gojiro, 3,868,599.
Sulzer Brothers Ltd.: *See—*
Wieland, Dietrich, 3,867,966.
Sumitomo Chemical Company, Ltd.: *See—*
Aratani, Tadatoshi; and Nakamura, Shuzo, 3,868,401.
Sumitomo Metal Industries, Ltd.: *See—*
Ito, Yoshinori; and Nakanishi, Mutsuo, 3,868,487.
Ito, Yoshinori; Yamauchi, Nobuyuki; and Tanaka, Sadac, 3,868,491.
Sakai, Tomoharu; and Matsui, Kaname, 3,868,265.
Sun Oil Company: *See—*
Zupanick, Joseph E., 3,867,994.
Sun Research and Development Co.: *See—*
Norton, Richard V., 3,868,400.
Sunkist Growers, Inc.: *See—*
Swisher, Horton E., 3,868,466.
Sunnen, Joseph. Automatic shut-off attachment. 3,868,007, Cl. 192-125.00B.
Super-Cut, Inc.: *See—*
Ellis, Stafford M., 3,868,146.
Sustarsic, John D.; Kinzler, Raymond C.; and Edgar, William D., to Koppers Company, Inc. Hot coke transfer system. 3,868,309, Cl. 202-262.000.
Svenska Dataregister AB: *See—*
Israelsson, Rolf B. E., 3,868,514.
Sweco Inc.: *See—*
Talley, Walter J., Jr., 3,868,326.
Swift & Company: *See—*
Tompkin, Robert B.; and Connick, Francis G., 3,868,468.
Swisher, Horton E., to Sunkist Growers, Inc. Dehydrated citrus peel product. 3,868,466, Cl. 426-199.000.
Swiss Aluminium Ltd.: *See—*
Schrade, Jean, 3,868,298.
Sykes, Donald J.; Papaconstantinou, Elias; and Murski, Kenneth, to Hunt, Philip A. Density sensing probe switch with adjustable float. 3,868,485, Cl. 200-61.200.
Sylten, Hans D.: *See—*
Holcomb, Jack N.; and Sylten, Hans D., 3,868,573.
Sylvania Electric Products Inc.: *See—*
Waymouth, John F.; and Koury, Frederic, 3,868,525.
Symmons Industries, Inc.: *See—*
Fehrm, Albert G., 3,867,957.
Szinai, Stephen S.; Crank, George; and Harding, David R. K., to Lilly Industries, Ltd. Perfluoroalkyl derivatives. 3,868,384, Cl. 260-307.00F.
Szpur, Roman; and Finley, Robert K., Jr., to Medicotech Company. Magnetized surgical instrument tray restraint. 3,868,016, Cl. 206-350.000.
Tabor, James B.: *See—*
Kappenhagen, George A.; and Tabor, James B., 3,868,547.
Tachibana, Keiji; Watanabe, Toru; and Tamura, Hisao, to Hitachi, Ltd. Tube-inserting apparatus. 3,867,752, Cl. 29-202.00R.
Tachibana, Makoto: *See—*
Ohyama, Chishio; Tachibana, Makoto; and Takada, Takeshi, 3,868,681.
Tagliabue, Renato: *See—*
Molteni, Luigi; Tenconi, Franco; and Tagliabue, Renato, 3,868,380.
Takada, Takeshi: *See—*
Ohyama, Chishio; Tachibana, Makoto; and Takada, Takeshi, 3,868,681.
Takagi, Tatsuya; and Takagi, Teruya. Pipe working method and apparatus. 3,867,824, Cl. 72-118.000.
Takagi, Teruya: *See—*
Takagi, Tatsuya; and Takagi, Teruya, 3,867,824.
Takahashi, Kiyoshi: *See—*
Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, 3,868,436.
Takamatsu, Ikuo, to Yoshida Kogyo Kabushiki Kaisha. Method of and apparatus for applying sliders to a slide fastener chain. 3,867,755, Cl. 29-408.000.
Takayama, Yoshihiro: *See—*
Masuda, Yoshiro; Kato, Kenji; Takayama, Yoshihiro; Kida, Kenji; and Nakanishi, Meiseki, 3,868,305.
Takekoshi, Tohru, to General Electric Company. Method for making n-substituted nitrophthalimides. 3,868,389, Cl. 260-326.00N.
Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Side brush operating means for a vehicle cleaning apparatus. 3,867,735, Cl. 15-21.00D.
Takeuchi Tekko Kabushiki Kaisha: *See—*
Takeuchi, Shigeo, 3,867,735.
Talley, Walter J., Jr., to Sweco Inc. Distributor for centrifugal screen separator. 3,868,326, Cl. 210-377.000.
Tamura, Fumihide; Ozawa, Yoichi; and Nakamura, Asao, to Ajinomoto Co., Inc. Method of producing hydrochloride of aspartic anhydride. 3,868,394, Cl. 260-346.80R.
Tamura, Hisao: *See—*
Tachibana, Keiji; Watanabe, Toru; and Tamura, Hisao, 3,867,752.
Tanabe, Motosuke: *See—*
Ashida, Hitoshi; Yasaka, Kenichiro; Tanabe, Motosuke; and Yoshino, Yuuji, 3,868,568.
Tanaka, Akira: *See—*
Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, 3,868,257.
Tanaka, Masaaki: *See—*
Hosoda, Taisei; Uzuhashi, Hideo; Kobayashi, Nobuyuki; and Tanaka, Masaaki, 3,867,960.
Tanaka, Osamu: *See—*
Yamamoto, Takaaki; Akanuma, Kaneo; and Tanaka, Osamu, 3,868,280.
Tanaka, Sadac: *See—*
Ito, Yoshinori; Yamauchi, Nobuyuki; and Tanaka, Sadac, 3,868,491.
Tanaka, Susumu; Enoguchi, Yuji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Apparatus for driving photosensitive element in electrophotographic copier of image transfer type. 3,868,181, Cl. 355-15.000.
Tangen Drives, Inc.: *See—*
Schultz, George E., 3,868,148.
Tanimoto, Mikio: *See—*
Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, 3,868,450.
Tanji, Mikiharu, to Ise Electronics Corporation. Fluorescent display devices. 3,868,542, Cl. 315-169.0TV.
Tardani, Angelo: *See—*
Faustini, Remo; Tardani, Angelo; and Del Monte, Raffaele, 3,868,456.
Tardoskegyi, Louis V., to Electrovert Manufacturing Co. Ltd. Cleaning of printed circuit boards by solid and coherent jets of cleaning liquid. 3,868,272, Cl. 134-26.000.
Tarka Controls Ltd.: *See—*
Taylor, John Crawshaw, 3,868,492.
Taylor, Everett W.: *See—*
Benson, Gustav E.; and Taylor, Everett W., 3,867,746.
Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., to Eli Lilly and Company. Plant growth regulation. 3,868,244, Cl. 71-76.000.
Taylor, Jack: *See—*
Tusch, Nicholas Norbert; Watson, Robert Ian; and Taylor, Jack, 3,868,268.
Taylor, John Crawshaw, to Tarka Controls Ltd. Heated windows in road vehicles. 3,868,492, Cl. 219-203.000.
Taylor, Paul Hollis. Liquid spring. 3,868,097, Cl. 267-124.000.
Taylor, Robert F.; Strow, Donald A.; and Mansouri, Hosein, to Envirex Inc. Water intake and fish return system. 3,868,324, Cl. 210-158.000.
Tecna Corporation: *See—*
Kitrilakis, Sotiris, 3,867,933.
Teets, John Leland: *See—*
Hufford, Guy Darrell, Jr.; and Teets, John Leland, 3,868,249.
Teich, Rudor M. Automobile theft alarm with ignition controlled automatic arming means. 3,868,518, Cl. 307-268.000.
Teichert, Ullrich: *See—*
Robock, Klaus; Teichert, Ullrich; and Munder, Paul Gerhard, 3,868,223.
Teijin Limited: *See—*
Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, 3,868,375.
Tektronix, Inc.: *See—*
Battjes, Carl R., 3,868,580.
Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Ferrieu, Gibert Marie Marcel; and Glasbergen, Johannes Wilhelmus, 3,868,574.
Guidoux, Loic Bernard Yves, 3,868,603.
Teledyne Wah Chang Albany: *See—*
Dimick, Royal H., 3,868,473.
Telefonaktiebolaget L M Ericsson: *See—*
Bergman, Ruben Gustav, 3,868,646.
Hagelin, Gunnar Johannes, 3,868,641.
Telesciences, Inc.: *See—*
Murgio, Joseph M.; Pincus, Lawrence J.; and Boehm, Guenter J., 3,868,480.
Teletype Corporation: *See—*
Mau, Theodore J., Jr.; and Peterson, John L., 3,868,673.
Tenconi, Franco: *See—*
Molteni, Luigi; Tenconi, Franco; and Tagliabue, Renato, 3,868,380.
Tendler, Robert Kanof. Wall hanger. 3,868,086, Cl. 248-467.000.
Terada, Hiroshi: *See—*
Abe, Masahiro; and Terada, Hiroshi, 3,868,044.
Tesalon Anstalt: *See—*
Zamarco, Gino; and Colombo, Gianni, 3,867,820.
Tessier, Froie Edwin: *See—*
Scott, Ian John; and Tessier, Froie Edwin, 3,867,955.
Texas Instruments Incorporated: *See—*
Buss, Dennis Darcy, 3,868,516.
Capps, Wallace A., Jr.; Groom, Lemuel D., III; Hartmann, Clinton S.; and Vollers, Howard G., Jr., 3,868,595.
Liu, Charles C.; and Hofer, Dean A., 3,868,689.

McBride, Lyle E., Jr.; Bowman, William W.; Stoeckler, Hans A.; Hanson, Harold A.; and Gibola, Joseph J., 3,868,620.
Textron Inc.: *See—*
Brandli, Ronald I., 3,867,991.
Thies, Joel O., to Xytex Corporation. Tape reel cartridge storage cell. 3,868,018, Cl. 211-40.000.
Thomas C. Wilson, Inc.: *See—*
Schott, Donald E., 3,868,193.
Thomas, Gordon D., to Kimberly-Clark Corporation. Embossed paper toweling and method of production. 3,868,205, Cl. 425-363.000.
Thomas, John Jerome: *See—*
Schwartzmann, Alfred; Mikenas, Vitas Anthony; Thomas, John Jerome; and Chang, Kern Konan, 3,868,588.
Thomasson, Gene I.: *See—*
Lake, William H.; and Thomasson, Gene I., 3,868,528.
Thompson, Brian Hoyle, to Gas Council, The. Reaction vessels. 3,868,226, Cl. 23-284.000.
Thompson, Frank B.: *See—*
Speigner, Jack D.; and Thompson, Frank B., 3,868,625.
Thompson, Larry G. Insect bite kit. 3,868,015, Cl. 206-229.000.
Thornburg, Donald R.: *See—*
Foster, Karl; and Thornburg, Donald R., 3,868,278.
Tichendorf, Dennis R.: *See—*
Davis, Stuart M.; and Tichendorf, Dennis R., 3,868,224.
Tidd, Arthus H., to Safety Laboratories, Inc. Sodium chlorate oxygen producing apparatus. 3,868,225, Cl. 23-281.000.
Tillman, James J.: *See—*
Stengle, Edward J.; and Tillman, James J., 3,868,343.
Titan Verpackungs System GmbH: *See—*
Buhne, Gerd, 3,867,878.
Titcombe, Alan, to Irvin Industries, Inc. Trailer bed. 3,868,083, Cl. 105-366.00B.
Tlustos, Giorgio: *See—*
Giangaspero, Michele; Tlustos, Giorgio; Bose, Marino; and Corsi, Domenico, 3,868,430.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Itoh, Takuji; Akitsuki, Ikuo; Miura, Tadashi; and Kubota, Kohei, 3,868,317.
Tokico Ltd.: *See—*
Onoda, Toshiaki; and Ito, Yoshimasa, 3,867,849.
Tokuyama Soda Kabushiki Kaisha: *See—*
Mizutani, Yukio; Kusumoto, Koshi; and Mizumoto, Yosinori, 3,868,314.
Tokyo Hoshiden Kabushiki Kaisha: *See—*
Nakaya, Kiyotaka, 3,868,486.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Masuoka, Fujio, 3,868,187.
Matsumoto, Shoichi; and Saito, Kazuyoshi, 3,868,251.
Tokyu Sharye Seizo Kaisha: *See—*
Tominaga, Hiroshi, 3,867,857.
Tolman, Richard L.; and Revankar, Ganapathi R. s-Triazolo[2,3-A] pryimidine nucleosides. 3,868,361, Cl. 260-211.50R.
Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, to Idemitsu, Kosar Kabushiki-Kaisha (Idemitsu Kosan Co., Ltd.). Fireproofing composition and method. 3,868,258, Cl. 106-15.0FP.
Tominaga, Hiroshi, to Tokyu Sharye Seizo Kaisha. Material cutting device. 3,867,857, Cl. 83-9.000.
Tompkin, Robert B.; and Connick, Francis G., to Swift & Company. Preparation of a shelf stable pre-cooked bacon product. 3,868,468, Cl. 426-243.000.
Tongue, Ben H., to Blonder-Tongue Laboratories, Inc. Constant resistance adjustable slope equalizer. 3,868,604, Cl. 333-28.00R.
Tornay, Edmund George, to Conch International Methane Limited. Method and apparatus for cryogenic tank warm-up. 3,867,818, Cl. 62-52.000.
Tornmarck, Sven Ivan Arvid; and Andersson, Per Olof, to Food Control AB. Methods and devices for automatically activating a chemical process at a given temperature. 3,868,218, Cl. 23-230.00R.
Toromanoff, Edmond: *See—*
Martel, Jacques; and Toromanoff, Edmond, 3,868,402.
Toth, Istvan: *See—*
Evans, Frank; Frey, Walter; Staeheli, Joerg; and Toth, Istvan, 3,868,420.
Toyama Chemical Co., Ltd.: *See—*
Ishimaru, Toshiyasu; and Kodama, Yutaka, 3,868,364.
Toyoda Koki Kabushiki Kaisha: *See—*
Ota, Takeshi, 3,867,856.
Tracy, James E.: *See—*
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., 3,868,349.
Traver, Darwin G., to Carrier Corporation. Air conditioning system. 3,867,980, Cl. 165-54.000.
Treglown, Edward M., to Midland-Ross Corporation. Ground fault current detector. 3,868,665, Cl. 340-255.000.
Trend Development Corporation: *See—*
Hanson, James E., 3,867,965.
Tri-Matic Inc.: *See—*
Purtell, Rufus J., 3,868,198.
Triessen, Fritz: *See—*
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz, 3,868,417.
Trimmer, Paul A.; and Cirule, Fred M., to Amerace Corporation. Self-latching security device for public coin-operated telephones. 3,868,483, Cl. 179-146.00R.
Tripple "I" Products, Inc.: *See—*
Broyles, Johnny Lee, 3,868,035.
Trissa Industries, Inc.: *See—*
Hazan, Isaac, 3,867,971.
Troy, Constantine T. Methods and apparatus for the manufacture of cellular cushioning materials. 3,868,285, Cl. 156-147.000.
True Brothers Conveyors Ltd.: *See—*
True, Ronald, 3,867,899.
True, Ronald, to True Brothers Conveyors Ltd. Automatic spraying machines. 3,867,899, Cl. 118-6.000.
Truelove, James E.: *See—*
Hussain, Anwar A.; and Truelove, James E., 3,868,461.
Trumbetas, Jerome: *See—*
Berg, Jeffrey H.; and Trumbetas, Jerome, 3,868,472.
TRW Inc.: *See—*
Winter, Donald C., 3,868,653.
Tseng, Peter: *See—*
Greenblatt, Abe, 3,867,786.
Tsuboi, Tokishige: *See—*
Otsuki, Tadao; Tsuboi, Tokishige; Sudo, Masashi; and Matsuda, Hidefumi, 3,868,207.
Tsuchida, Isamu. Apparatus for unfolding, spreading and guiding a travelling knitted fabric. 3,867,744, Cl. 26-54.000.
Tsuchiya, Takuzo; Valentas, Kenneth J.; and Morse, Donald W., to Gorton Corporation, The. Frozen fish cutter. 3,867,858, Cl. 83-113.000.
Tsumura, Nobuzo; Yanai, Shoji; and Ishikawa, Masako, to Director of National Food Research Institute. Method of producing enzyme and its utilization thereof. 3,868,303, Cl. 195-2.000.
Tsunoda, Akiji: *See—*
Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, 3,868,258.
Tucciarone, John Walter: *See—*
Bellantoni, Frank A., deceased; and Tucciarone, John Walter, 3,867,942.
Tup! (Panama) S.A. Via Espana: *See—*
Tupper, Earl Silas, 3,867,928.
Tupper, Earl Silas, to Tup! (Panama) S.A. Via Espana. Massage device. 3,867,928, Cl. 128-24.100.
Turk, Leonard G., to NRM Corporation. Tire molding machine. 3,868,203, Cl. 425-242.000.
Turnwald, Ernst, to Linde Aktiengesellschaft. Cryogenic valve. 3,867,958, Cl. 137-375.000.
Tusch, Nicholas Norbert; Watson, Robert Ian; and Taylor, Jack, to Colebrand Limited. Under-water spraying. 3,868,268, Cl. 117-104.00R.
Tuschak, George: *See—*
Backhaus, Karl L.; and Tuschak, George, 3,867,827.
Tuttle, Terry E.: *See—*
Schweitzer, John C.; and Tuttle, Terry E., 3,868,479.
Tyco Laboratories, Inc.: *See—*
Mlavsky, Abraham I.; and Pandiscio, Nicholas A., 3,868,228.
Uchida, Yukio: *See—*
Murata, Yuuji; Mashiko, Yoshinori; Uchida, Yukio; and Matsumoto, Mitsuru, 3,868,510.
Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Light measuring device for shutter control mechanism. 3,868,703, Cl. 354-49.000.
Ueda, Masahiro: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.
Ulisch, Gunter; and Heinze, Gerhard, to Bayer Aktiengesellschaft. Insulating glass unit containing absorbent mixture. 3,868,299, Cl. 161-162.000.
Ultracentrifuge Nederland N.V.: *See—*
Zondag, Nicolaas Abraham, 3,868,131.
United Aircraft Corporation: *See—*
Speigner, Jack D.; and Thompson, Frank B., 3,868,625.
United Aircraft Products, Inc.: *See—*
Cozzolino, Henry; and Gastineau, Robert L., 3,867,973.
United States of America
Agriculture: *See—*
Daigle, Donald J.; Reeves, Wilson A.; and Drake, George L., Jr., 3,868,269.
Franklin, William E.; Rowland, Stanley P.; and Madacsi, John P., 3,868,216.
Air Force: *See—*
Siefker, Robert G., 3,867,759.
Army: *See—*
Anderson, David K., 3,868,504.
Basso, Michael J.; and Kronemberg, Stanley, 3,868,511.
Cohen, Leonard; Coulter, Philip B.; and Zeffert, Bernard M., 3,868,446.
Dunmire, Howard L.; and Hacskaylo, Michael, 3,867,764.
Ennulat, Reinhard D.; LoVecchio, Paul; Elser, Wolfgang; and Boyd, Philip R., 3,867,757.
Gazza, George E.; and Lindley, Michael W., 3,868,267.
Lavitt, Joseph W., 3,868,282.
Skujins, Romans, Jr., 3,868,667.
Stahl, Herbert A., 3,868,524.
Atomic Energy Commission: *See—*
Blackham, Angus U.; and Palmer, James L., 3,868,333.
Panitz, John A., 3,868,507.
Commerce: *See—*
Watt, Arthur D., 3,868,577.
Interior: *See—*

Fasching, George E.; and Patton, George H., 3,868,509.
National Aeronautics and Space Administration: *See*—
Mumola, Peter B.; and McAlexander, Belton T., 3,868,591.
Navy: *See*—
Abbott, Frank R., 3,868,623.
Dilley, Douglas M., 3,868,579.
Drelicharz, Joseph A., 3,868,139.
Geller, Myer, 3,868,503.
Hughes, Richard Smith, 3,868,688.
Kaufman, Rubin P.; Rosenfeld, Jack B.; and Schiller, Elaine, 3,868,572.
Knott, Sydney T., 3,868,622.
[illegible] John W., 3,868,601.
[illegible], 3,868,686.
[illegible]533.
Poos, [illegible]868,605.
Reilly, [illegible], 3,862,143.
Saholt, Gr[illegible]e J.; and Sc[illegible]br, Donald, 3,867,893.
Schwee, Leonard J., 3,868,659.
Schwee, Leonard J., 3,868,660.
Sessler, John G.; and Weiss, Volker, 3,867,836.
Urban, Ellison C., II; and McKee, Carl L., 3,867,753.
Whitehouse, Harper John; and Horwath, Tibor G., 3,868,624.
U.S. Philips Corporation: *See*—
Antuma, Hendrikus Jan, 3,867,845.
Beeren, Aloysius Jacobus Maria; and Stoffelen, Henricus Karel Jozef, 3,868,502.
Buurman, Herman; and Romberg, Hendrik, 3,868,240.
De Fraeye, Dirk Jules Remi; and Mewissen, Jan Alfons Catharina, 3,868,531.
De Graaff, Philip Johan, 3,868,725.
De Vries, Gerhard Heinrich Friedrich; Hornman, Johannes Petrus; Kuster, Hendrik; and Van Esdonk, Johannes, 3,868,527.
Kaver, Erhard; Schroder, Johann; and Horster, Horst, 3,868,159.
Klopfer, Anton Martin; Garbe, Siegfried; Frank, Gunter; and Peterek, Manfred, 3,868,523.
Le Can, Claude Jan Principe Frederic; and Steinmaier, Walter, 3,868,722.
Lorteije, Jean Hubertus Josef, 3,868,674.
Schuil, Roelof Egbert, 3,868,533.
Van Tiel Cornelius Hendrikus Josephus; and Berns, Gerhardus Johannus, 3,868,077.
Van Kamp, Harmen; and De Wachter, Anna Maria, 3,868,453.
Van Osterhout, Gerard Willem; Lemmen, Vhendrikus Johannes; and Klomp, Cornelis Johannes, 3,867,900.
Van Zuijlen, Peter; and Fontijn, Leendert Antonius, 3,868,541.
Visser, Jan, 3,868,239.
Zandveld, Frederik, 3,868,647.
United States Scientific Instruments, Inc.: *See*—
Marshall, Duane, 3,868,562.
Universal Telewriters (UK) Limited: *See*—
Salam, Hassan Paddy Abdel, 3,868,610.
University of California, The Regents of the: *See*—
Wang, Shyh, 3,868,589.
University of Utah: *See*—
Wadsworth, Milton E., 3,868,439.
Unterstenhofer, Gunter: *See*—
Zumach, Gerhard; Hammann, Ingeborg; Unterstenhofer, Gunter; and Wegler, Richard, 3,868,404.
Urban, Ellison C., II; and McKee, Carl L., to United States of America, Navy, Universal card extractor tool, 3,867,753, Cl. 29-203.00H.
Urbaniak, James R.: *See*—
Stubstad, James A.; Urbaniak, James R.; and Kahn, Paul, 3,867,728.
Utility Products Co.: *See*—
Olson, John B., 3,868,080.
Uzuhashi, Hideo: *See*—
Hosoda, Taisei; Uzuhashi, Hideo; Kobayashi, Nobuyuki; and Tanaka, Masaaki, 3,867,960.
Vail, Richard W., Jr. Canine security leash. 3,867,905, Cl. 119-109.000.
Vaithinathan, Krisnamurthy: *See*—
Godfrey, Loren; and Vaithinathan, Krisnamurthy, 3,868,275.
Valentas, Kenneth J.: *See*—
Tsuchiya, Takuzo; Valentas, Kenneth J.; and Morse, Donald W., 3,867,858.
Valley Engineering, Inc.: *See*—
Waterman, Donald H., 3,867,992.
Valyi, Emery I. Apparatus for the production of composite containers. 3,868,202, Cl. 425-242.00B.
Van Tiel Cornelius Hendrikus Josephus; and Berns, Gerhardus Johannus, to U.S. Philips Corporation. Connector for a lamp holder of a lamp starter holder. 3,868,077, Cl. 248-27.000.
Van Arsdel, Thomas P. Gas motor power system. 3,867,812, Cl. 60-39.150.
Vance Industries, Inc.: *See*—
Cambern, Lonnie Kenneth, 3,867,846.
Van de Gent, Edouard Louis, to Prentex. Stacking device. 3,867,876, Cl. 93-93.0DP.
Van De Kraats, Eduard J.; Buitelaar, Arnold A.; and Schreuder, Thomas, to Shell Oil Company. Fuel composition. 3,868,231, Cl. 44-62.000.
Vander Ley, Robert J., to Lescoa, Inc. Rotary cabinet assembly. 3,868,156, Cl. 312-238.000.
Van Esdonk, Johannes: *See*—
De Vries, Gerhard Heinrich Friedrich; Hornman, Johannes Petrus; Kuster, Hendrik; and Van Esdonk, Johannes, 3,868,527.
Van Gilder, James F.; and Schmidt, Donald R., to Skyway Sales Corporation. Filter unit for fluid cleaner. 3,868,327, Cl. 210-457.000.
Van Kamp, Harmen; and De Wachter, Anna Maria, to U.S. Philips Corporation. 16-Methylene-9/beta, 10alpha-steroid compounds, pharmaceutical preparations which contain the novel compounds as active ingredients and methods of producing the said compounds and preparations. 3,868,453, Cl. 424-243.000.
Van Kleef, Alfred L.; Roffel, Derk; and Van Vollenhoven, Frits W., to Shell Oil Company. Selective solvent extraction process. 3,868,310, Cl. 203-58.000.
Van Lanen, James M., deceased; Smith, Merritt B.; and Maisch, Weldon F., to Hiram Walker & Sons, Inc. Production of distillers yeast. 3,868,307, Cl. 195-82.C/0.
Van Loan, Paul R., to Airco, Inc. Resistive glaze and paste compositions. 3,868,334, Cl. 252-520.000.
Van Lookeren Campagne, Nicolaas, to Shell Oil Company. Process for the partial combustion of hydrocarbonaceous fuels to produce substantially soot-free gases. 3,868,331, Cl. 252-373.000.
Van Osch, John H. Still camera film metering mechanism. 3,868,710, Cl. 354-213.000.
Van Osterhout, Gerard Willem; Lemmen, Vhendrikus Johannes; and Klomp, Cornelis Johannes, to U.S. Philips Corporation. Device for coating a synthetic resin base with a layer of lacquer. 3,867,900, Cl. 118-33.000.
Van Vollenhoven, Frits W.: *See*—
Van Kleef, Alfred L.; Roffel, Derk; and Van Vollenhoven, Frits W., 3,868,310.
Van Zuijlen, Peter; and Fontijn, Leendert Antonius, to U.S. Philips Corporation. Filament-current control unit in electron-beam apparatus. 3,868,541, Cl. 315-94.000.
Varian Associates: *See*—
Enck, Richard S., Jr., 3,868,536.
Farney, George K., 3,868,539.
Meddaugh, Gard E., 3,868,602.
Vaughn, James: *See*—
West, Roland James, 3,867,923.
Vaughn, Thomas C.: *See*—
Blazek, Frank V.; and Vaughn, Thomas C., 3,868,075.
Velardi, Joseph A. Brush with material supply. 3,868,188, Cl. 401-190.000.
Vennola, Jorma; and Korpijaako, Erkki Pekka, to Columbia Broadcasting System, Inc. Toy drum. 3,867,863, Cl. 84-420.000.
Vercon Products, Inc.: *See*—
Murphy, Wesley T., 3,867,802.
Vereinigte Drahtindustrie GmbH: *See*—
Striepens, Heinz; and Schulte, Horst, 3,867,825.
Veriflo Corporation: *See*—
Ollivier, Louis A., 3,867,934.
Verlander, Donald M. Stake puller. 3,867,733, Cl. 7-8.10R.
Vesperman, William Charles: *See*—
Sauer, Earl Salvator; and Vesperman, William Charles, 3,868,341.
Vi-Amino Feeds, Inc.: *See*—
Olson, Eldred, 3,868,467.
Vicard, Pierre Georges. Boats and other devices driven by a sail. 3,867,894, Cl. 114-102.000.
Victor Comptometer Corporation: *See*—
Groner, Norman A., 3,868,114.
Vietor, Carl W. Terminal airways traffic control system. 3,868,497, Cl. 235-150.270.
Vincent, Michel; Remond, Georges; and Desnoyers, Pierre, to Societe en nom collectif Science Union et Cie, Societe Francaise de Recherche. Isobutyl cyclohexenyl compounds alpha (p-isobutylcyclohexenyl) alkanoic acids. 3,868,411, Cl. 260-514.00L.
Visser, Jan, to U.S. Philips Corporation. Sorption pump. 3,868,239, Cl. 55-389.000.
Vogerl, Manfred: *See*—
Daxer, Hilmar; Dietz, Wolfgang; Herrmann, Hans; and Vogerl, Manfred, 3,868,435.
Vogt, Georg: *See*—
Kratel, Gunter; Stohr, Gunter; Vogt, Georg; and Hechtl, Wolfgang, 3,868,345.
Volker, Hans-Joachim: *See*—
Scheibler, Erich; and Volker, Hans-Joachim, 3,868,443.
Volkswagenwerk Aktiengesellschaft: *See*—
Bigalke, Erhard, 3,867,916.
Vollers, Howard G., Jr.: *See*—
Capps, Wallace A., Jr.; Groom, Lemuel D., III; Hartmann, Clinton S.; and Vollers, Howard G., Jr., 3,868,595.
Vonderheide, Harry J.: *See*—
Ferguson, Edgar J.; Vonderheide, Harry J.; and Ferguson, John L., 3,868,194.
Voronov, Nikolai Stepanovich: *See*—
Moshnin, Evgeny Nikolaevich; Romashko, Nikolai Ivanovich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stepanovich; and Deryabkin, Viktor Ilich, 3,867,831.
W. R. Grace & Co.: *See*—
Hahn, Peter A.; Hartdegen, Frank J.; and Espenshade, Marlin A., 3,868,448.
Wacker-Chemie GmbH: *See*—
Sabel, Alex; and Popp, Walter, 3,868,347.
Wadsworth, F. T.: *See*—
Dotson, Anderson, Jr.; and Wadsworth, F. T., 3,868,388.

Wadsworth, Milton E., to University of Utah. Method of increasing copper production. 3,868,439, Cl. 423-41.000.

Waeselynck, Raymond Francois Maurice, to Compagnie Francaise de Raffinage. Power modulation of a thermal generator. 3,867,811, Cl. 60-39.030.

Wagner, Joseph Robert, to Huyck Corporation. Dryer fabric for a papermaking machine. 3,867,766, Cl. 34-95.000.

Wagner, Karl: *See—*
Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, 3,868,708.

Waldvogel, Guy: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.

Wall, Warren B.: *See—*
Jacobson, Larry A.; Wall, Warren B.; and Johnstone, Charles Wilkin, 3,868,505.

Walser, Armin: *See—*
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,868,363.
Fryer, Rodney Ian; and Walser, Armin, 3,868,362.

Walsh, LaVerne E., to General Electric Company. Halogen lamp containing nickel-plated parts. 3,868,529, Cl. 313-222.000.

Walter, Robert R.: *See—*
Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H., 3,868,353.

Waltower, Napoleon. Key case. 3,867,823, Cl. 70-456.00B.

Wang, Shyh, to University of California, The Regents of the. Thin film devices and lasers. 3,868,589, Cl. 331-94.500.

Wanzenberg, Frederick Wheelock; and Wanzenberg, Fritz Walter. Deep sea mining system. 3,868,312, Cl. 204-109.000.

Wanzenberg, Fritz Walter: *See—*
Wanzenberg, Frederick Wheelock; and Wanzenberg, Fritz Walter, 3,868,312.

Ward, William H.: *See—*
Pennington, Harold W.; and Ward, William H., 3,868,192.

Ware, Gordon K., to Chicago Roller Skate Company. Plastic skate sole plate with adjustable toe-stop mount. 3,868,121, Cl. 280-11.200.

Warner-Lambert Company: *See—*
Herrmann, Wolfgang Dieter; Stoss, Peter Johannes; and Saltzinger, Gerhard, 3,868,418.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,259.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,260.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,339.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,340.
Keegan, James J.; Rubin, Howard; and Gidwani, Ram N., 3,868,432.
Zinnes, Harold; Schwartz, Martin L.; Lindo, Neil A.; and Shavel, John, Jr., 3,868,367.
Zinnes, Harold; and Lindo, Neil A., 3,868,379.

Watanabe, Toru: *See—*
Tachibana, Keiji; Watanabe, Toru; and Tamura, Hisao, 3,867,752.

Waterman, Donald H., to Valley Engineering, Inc. Load transferring hitch for a vehicle. 3,867,992, Cl. 180-14.00B.

Watson, Robert Ian: *See—*
Tusch, Nicholas Norbert; Watson, Robert Ian; and Taylor, Jack, 3,868,268.

Watt, Arthur D., to United States of America, Commerce. Radio receiver with impulse noise reducing circuit. 3,868,577, Cl. 325-476.000.

Waymouth, John F.; and Koury, Frederic, to Sylvania Electric Products Inc. Metal halide discharge lamp having a particular ratio of halogen atoms to mercury atoms. 3,868,525, Cl. 313-184.000.

Wayne, William C., Jr.: *See—*
Jones, Edward M.; and Wayne, William C., Jr., 3,867,862.

Wean United, Inc.: *See—*
Kent, Francis J.; and Schmidt, Herbert, 3,867,828.

Weaver, Curtis C.; and Kirkpatrick, Robert E. Material distributing apparatus for a silo. 3,868,149, Cl. 302-60.000.

Weaver, Peter Brinkerhoff. Line selector for pneumatic systems. 3,868,071, Cl. 243-31.000.

Weber, Donald L.: *See—*
Drummond, Carl W.; and Weber, Donald L., 3,867,776.

Weber, Richard Alan: *See—*
Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, 3,868,719.

Wegler, Richard: *See—*
Zumach, Gerhard; Hammann, Ingeborg; Unterstenhofer, Gunter; and Wegler, Richard, 3,868,404.

Weighton, David M.: *See—*
Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.

Weinberg, Joseph Michael: *See—*
Barak, Amitzur Ze'ev; Weinberg, Joseph Michael; and Pachter, Moshe, 3,868,308.

Weinger, Siegfried. Hoop toy. 3,867,787, Cl. 46-100.000.

Weinstein, Jay: *See—*
Daniels, Peter J. L.; and Weinstein, Jay, 3,868,360.

Weis, Claus: *See—*
Petitpierre, Jean-Claude; and Weis, Claus, 3,868,419.

Weisner, Paul: *See—*
Stonner, Hans-Martin; Knoppe, Ulrich Von; Weisner, Paul; Kraus, Erhard; and Zigelsky, Fritz, 3,868,335.

Weiss, Richard: *See—*
Strauss, Karl-Peter; and Weiss, Richard, 3,868,702.

Weiss, Volker: *See—*
Sessler, John G.; and Weiss, Volker, 3,867,836.

Wemmers, Anton, to GAF Corporation. Positive working quinone diazide lithographic plate compositions and articles having non-ionic surfactants. 3,868,254, Cl. 96-75.000.

Werkzeumaschinenfabrik Gildemeister & Comp. A.G.: *See—*
Koch, Hans Joachim; and Schaefer, Wolfgang, 3,867,756.

Wescott, Ronald Owen: *See—*
Hennessey, William Michael; and Wescott, Ronald Owen, 3,868,676.

West, Roland James, to Borbely, Ronald J.; Burtt, Richard S.; Newcomb, Paul; Vaughn, James; Grant, George; Gomes, Robert; and Andover Medical Industries, Inc., part interest to each. Fluid sampler. 3,867,923, Cl. 128-2.00F.

Western Electric Company, Incorporated: *See—*
Sauer, Earl Salvator; and Vesperman, William Charles, 3,868,341.

Westinghouse Air Brake Company: *See—*
Blazek, Frank V.; and Vaughn, Thomas C., 3,868,075.
Darrow, John O. G., 3,868,683.
Grundy, Reed H., 3,868,548.

Westinghouse Brake & Signal Company Limited: *See—*
Maskery, Arthur, 3,868,150.

Westinghouse Electric Corporation: *See—*
Blewitt, Donald D., 3,868,619.
Byerley, Wilbur M.; and Bennett, Robert R., 3,867,908.
Curtis, Little P.; and Heller, Paul R., 3,868,520.
Driscoll, Michael M., 3,868,606.
Foster, Karl; and Thornburg, Donald R., 3,868,278.
Hickam, William M.; and Charles, Robert G., 3,868,059.
Hugoson, Birger O., 3,868,197.
Johnson, Leslie, 3,868,079.
Kappenhagen, George A.; and Tabor, James B., 3,868,547.
Lloyd, Raymond A., 3,868,508.
New, Thorndike C.; and Krishna, Surinder, 3,868,720.
Rogers, Dow A., Jr.; and Smith, James D. B., 3,868,613.
Sholtes, Carl E., 3,868,153.
Singleton, Norman R., 3,868,302.
Spear, Richard M.; and Capuano, Louis M., 3,868,000.
White, Dale, 3,867,982.

Westover, Robert Franklin: *See—*
Howard, John Benedict; and Westover, Robert Franklin, 3,868,221.

Westphal, Kenneth M. Bow drawing indicator. 3,867,920, Cl. 124-24.00R.

Westphal, Richard C.; and Heinig, Paul, to Foster Grant Co., Inc. Polymer composition and process. 3,868,434, Cl. 260-880.00R.

Wheeler, Robert G., to Wood Processes, Oregon Ltd. Method of making a composite panel laminate having deep indentations. 3,868,300, Cl. 162-124.000.

Whitaker, Howard L.: *See—*
Poley, Neil M.; and Whitaker, Howard L., 3,868,271.

White, Dale, to Westinghouse Electric Corporation. Electrical apparatus having a static valve system. 3,867,982, Cl. 165-107.000.

Whitehouse, Harper John; and Horwath, Tibor G., to United States of America, Navy. Apparatus for mapping acoustic fields. 3,868,624, Cl. 340-8.00R.

Whitehouse, Wendell G.: *See—*
Hand, John D.; and Whitehouse, Wendell G., 3,868,351.

Wicker Works, The: *See—*
Rocchia, Peter A.; and Steffy, Robert M., 3,867,967.

Wickes Corporation, The: *See—*
Jacobson, Roland A.; and Janes, Billy F., 3,868,201.

Wickman Machine Tool Sales Limited: *See—*
Wilkins, Albert Arthur, 3,867,763.

Wickson, Arthur K., to Garrett Corporation, The. Electrical circuit and interrupter. 3,868,552, Cl. 317-40.00A.

Widlund, Charles R., to Ametek, Inc. One-piece snap assembly plastic movement for gauges. 3,867,841, Cl. 73-432.00A.

Wiechert, Rudolf: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldvogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,868,366.

Wieland, Dietrich, to Sulzer Brothers Ltd. Electro-mechanical device for forming a shed in a weaving machine. 3,867,966, Cl. 139-55.000.

Wieneke, Frederick L.: *See—*
Crandall, Charles B.; and Wieneke, Frederick L., 3,867,745.

Wilhelm, Max: *See—*
Beck, Dieter; Bernasconi, Raymond; Schenker, Karl; and Wilhelm, Max, 3,868,421.

Wilkins, Albert Arthur, to Wickman Machine Tool Sales Limited. Setting fixture for machine tools. 3,867,763, Cl. 33-185.00R.

Wilkins, Colbert W.: *See—*
Hider, Shibley A.; Rogers, John K.; and Wilkins, Colbert W., 3,868,320.

Wilkinson Dental Manufacturing Co., Inc.: *See—*
Hufford, Guy Darrell, Jr.; and Teets, John Leland, 3,868,249.

Wilkinson Sword Limited: *See—*
Ray, Brian, 3,868,663.

Wilkinson, Thelton E. Apparatus for and method of preventing blowout while removing a fish within wash pipe from a borehole. 3,867,985, Cl. 166-224.00A.

Will, Fritz G.; and Dubin, Robert R., to General Electric Company. Battery casing and sealed primary sodium-halogen battery. 3,868,273, Cl. 136-83.00R.

Willersinn, Carl-Heinz: *See—*
Duembgen, Gerd; Engelbach, Heinz; Frey, Walter; Krabetz, Richard; Lebert, Ulrich; Triessen, Fritz; and Willersinn, Carl-Heinz, 3,868,417.

William H. Rorer, Inc.: *See—*
Diamond, Julius, 3,868,462.

Williams, David Gordon: *See—*
Winkley, Albert William; and Williams, David Gordon, 3,868,558.

Williams, G. Norman, to GTE Sylvania Incorporated. Surface wave filter. 3,868,608, Cl. 333-72.000.

Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; Jones, Christopher Robin; and Adey, Anthony John, to C.A.V. Limited. Fuel supply systems for internal combustion engines. 3,867,918, Cl. 123-139.00E.

Williford, Jerry G., to Rockwell International Corporation. FSK oscillator. 3,868,596, Cl. 331-108.00R.

Willingham, John H. Crane with boom attachment. 3,868,023, Cl. 212-46.00R.

Wilmot, Richard D. Radar digital detector and beam splitter. 3,868,685, Cl. 343-5.0DP.

Wilson, Herbert S. Anchor bolt form. 3,867,804, Cl. 52-699.000.

Winchester, James E., Sr. Mixing and bagging machine for dry mixes. 3,867,970, Cl. 141-67.000.

Windle, William: *See—*
Clark, Norman Owen; and Windle, William, 3,868,318.

Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, to Agfa-Gevaert Aktiengesellschaft. Film metering mechanism for cameras. 3,868,708, Cl. 354-206.000.

Winkley, Albert William; and Williams, David Gordon, to Lucas Electrical Company Limited, The. Battery charging systems. 3,868,558, Cl. 320-12.000.

Winkley, Albert William: *See—*
Hill, William Frank; and Winkley, Albert William, 3,868,559.

Winter, Donald C., to TRW Inc. Erasable optical memory. 3,868,653, Cl. 340-173.0LS.

Wion, Donald Andrew: *See—*
Koch, Robert Milton; and Wion, Donald Andrew, 3,867,754.

Wisconsin Alumni Research Foundation: *See—*
Sih, Charles J., 3,868,306.

Wishart, George L.: *See—*
Linn, Donald F.; and Wishart, George L., 3,868,006.

Witt, Harro: *See—*
Reiff, Helmut; Witt, Harro; and Dieterich, Dieter, 3,868,350.

Witting, Harald L.; and Fielding, John O., to General Electric Company. Mold for electric discharge lamp. 3,868,242, Cl. 65-360.000.

Wittwer, John C. Safety package for collapsible tubes. 3,868,036, Cl. 215-12.000.

Wolfe, Henry S. Trolling feather. 3,867,781, Cl. 43-42.090.

Wolfgarten, Hubert: *See—*
Meier, Franz; Ossendorf, Erich; and Wolfgarten, Hubert, 3,868,236.

Wood, Ernest C.: *See—*
Samuels, Peter B., 3,867,944.

Wood Processes, Oregon Ltd.: *See—*
Wheeler, Robert G., 3,868,300.

Woodard, Roland L.; and Hughes, Patrick L. Golf yardage finder. 3,868,692, Cl. 343-112.00D.

Woodbury, Luther A. Signal light for fishing. 3,868,668, Cl. 340-279.000.

Wright, Jerauld George. Sofa-bed. 3,867,730, Cl. 5-37.00C.

Wright, John S., to Xerox Corporation. Preconditioner for paper stock. 3,867,767, Cl. 34-155.000.

Wrobel, Gunter: *See—*
Schlicker, Volker; and Wrobel, Gunter, 3,868,521.

Xerox Corporation: *See—*
Ernst, Richard J.; and Rod, Trygve R., 3,868,292.
Kidd, Wayne L., 3,868,182.
Stemmle, Denis J., 3,868,019.
Wright, John S., 3,867,767.

Xytex Corporation: *See—*
Thies, Joel O., 3,868,018.

Yakimenko, Jury Fedorovich: *See—*
Shulika, Valery Petrovich; Khazhinsky, Jury Nikolaevich; Yakimenko, Jury Fedorovich; and Savchenko, Anatoly Vladimirovich, 3,868,213.

Yakota, Hideo, to Canon Kobushiki Kaisha. Telephoto type objective of large relative aperture ratio. 3,868,174, Cl. 350-216.000.

Yale, Harry Louis; and Petigara, Ramesh B., to E. R. Squibb & Sons, Inc. Therapeutic compounds and intermediates therefor. 3,868,374, Cl. 260-256.40F.

Yamada, Seiji; and Yata, Kotaro, to Minolta Camera Kabushiki Kaisha. Control system for a single lens reflex camera. 3,868,704, Cl. 354-50.000.

Yamada, Shoji: *See—*
Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, 3,868,257.

Yamamoto, Osami, to Mitsui Shipbuilding and Engineering Co., Ltd. Rudder for ship. 3,867,897, Cl. 114-167.000.

Yamamoto, Takaaki; Akanuma, Kaneo; and Tanaka, Osamu. Method of forming electric insulating films oriented silicon steel. 3,868,280, Cl. 148-113.000.

Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, to Teijin Limited. Process for separating methylterephthalic acid and 4-methylisophthalic acid from mixtures of the two, at each higher concentrations. 3,868,375, Cl. 260-268.00R.

Yamauchi, Nobuyuki: *See—*
Ito, Yoshinori; Yamauchi, Nobuyuki; and Tanaka, Sadao, 3,868,491.

Yanai, Shoji: *See—*
Tsumura, Nobuzo; Yanai, Shoji; and Ishikawa, Masako, 3,868,303.

Yarborough, J. Michael; and Hobart, James L., to Coherent Radiation. Tuning apparatus for a dye laser. 3,868,592, Cl. 331-94.50C.

Yasaka, Kenichiro: *See—*
Ashida, Hitoshi; Yasaka, Kenichiro; Tanabe, Motosuke; and Yoshino, Yuuji, 3,868,568.

Yata, Kotaro: *See—*
Yamada, Seiji; and Yata, Kotaro, 3,868,704.

Yatsenko, Fedot Evdokimovich: *See—*
Frolov, Veniamin Dmitrievich; Yatsenko, Fedot Evdokimovich; Pertsev, Viktor Vladimirovich; Rubtsov, Valery Dmitrievich; Belyankin, Vitaly Alexandrovich; Matveev, Viktor Vasilievich; and Bernshtein, Max Khatskelevich, 3,867,741.

Yearick, Betty L.: *See—*
Joyner, Bobby L.; Yearick, Betty L.; Kaiser, Harold S.; and Anderson, James W., 3,867,929.

Yeh, Hou Leh: *See—*
Gilbreath, Benjamin F.; and Yeh, Hou Leh, 3,868,546.

Yokoi, Masatada, to Aisin Seiki Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Wheel cylinder in a hydraulic brake system of a vehicle. 3,868,001, Cl. 188-345.000.

Yonkers, Edward H. Grounded surface distribution apparatus. 3,868,616, Cl. 337-201.000.

Yoshida, Kenji: *See—*
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Takamatsu, Ikuo, 3,867,755.

Yoshino, Yuuji: *See—*
Ashida, Hitoshi; Yasaka, Kenichiro; Tanabe, Motosuke; and Yoshino, Yuuji, 3,868,568.

Young, David E. Powered adjustable rear view mirror for a truck trailer. 3,868,176, Cl. 350-289.000.

Young, David W. Flap antenna. 3,868,693, Cl. 343-708.000.

Zaech, Jean: *See—*
Aeschlimann, Jean-Philippe; Monnier, Pierre; and Zaech, Jean, 3,868,490.

Zajaczkowski, Russell W.: *See—*
Schwertner, Gary T.; and Zajaczkowski, Russell W., 3,868,130.

Zajc, Ludwig J. Spit basket and support therefor. 3,867,877, Cl. 99-402.000.

Zamarco, Gino; and Colombo, Gianni, to Tesalon Anstalt. Electronic apparatus for controlling the needles in knitting machines. 3,867,820, Cl. 66-154.00A.

Zandveld, Frederik, to U.S. Philips Corporation. Elimination of transient errors in a data processing system by clock control. 3,868,647, Cl. 340-172.500.

Zapadinsky, Isaakovich: *See—*
Berlin, Alfred Anisimovich; Liogonky, Boris Izrailevich; and Zapadinsky, Isaakovich, 3,868,348.

Zeenkov, Michael N., to Fairchild Industries Inc. Apparatus and method for scanning and storing information located on rapidly moving articles. 3,868,478, Cl. 178-6.800.

Zeffert, Bernard M.: *See—*
Cohen, Leonard; Coulter, Philip B.; and Zeffert, Bernard M., 3,868,446.

Zeile, Karl: *See—*
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,868,460.

Zenith Radio Corporation: *See—*
Adler, Robert, 3,868,553.
Blanchard, David L., 3,868,538.
Mac Lean, Gerald K.; and Minzenberger, Thomas C., 3,868,532.

Zeutschel, Heinz, to NCR Corporation. Microform positioning apparatus. 3,868,179, Cl. 353-27.000.

Zeyns, Johannes; and Enneking, Heinz. Combustion machines. 3,867,917, Cl. 123-119.00R.

Zigelsky, Fritz: *See—*
Stonner, Hans-Martin; Knoppe, Ulrich Von; Weisner, Paul; Kraus, Erhard; and Zigelsky, Fritz, 3,868,335.

Zimberg, Walter M.: *See—*
Cull, Jay A.; and Zimberg, Walter M., 3,868,397.

Zimmermann, Paul, to Honsel-Werke AG. Heat resistant alloys. 3,868,250, Cl. 75-147.000.

Zinn, Robert W. Collapsible projection screen structure. 3,868,078, Cl. 248-171.000.

Zinnes, Harold; Schwartz, Martin L.; Lindo, Neil A.; and Shavel, John, Jr., to Warner-Lambert Company. 4-Hydroxy-3-(5-isoxazolylcarbamoyl)-2H-1,2-benzothiazine 1,1-dioxides. 3,868,367, Cl. 260-243.00R.

Zinnes, Harold; and Lindo, Neil A., to Warner-Lambert Company. Heterocyclic amides of 4-hydroxy-2H-1-benzothiopyran-3-carboxylic acid 1,1-dioxide. 3,868,379, Cl. 260-294.80C.

Zoecon Corporation: *See—*
Siddall, John B., 3,868,406.

Zondag, Nicolaas Abraham, to Ultracentrifuge Nederland N.V. Methods and device for welding a metal pipe to a metal body by means of an explosive charge. 3,868,131, Cl. 285-286.000.

Zumach, Gerhard; Hammann, Ingeborg; Unterstenhofer, Gunter; and Wegler, Richard, to Bayer Aktiengesellschaft. Substituted methyl ethers of 2-branched-alkyl-4,6-dinitrophenols. 3,868,404, Cl. 260-471.00C.

Zupanick, Joseph E., to Sun Oil Company. Surface effect vehicle control system. 3,867,994, Cl. 180-118.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abilock, Solomon, R. Shottenfeld, and T. Brown, to Lindly & Co., Inc. System for detecting defects in continuous traveling material. Re. 28,347, 2–25–75, Cl. 250—562.

Breetvelt, Emile, to Intermenua (Proprietary) Ltd. Guillotines and like shearing machines. Re. 28,345, 2–25–75, Cl. 83—157.

Brown, Thomas: *See*—
Abilock, Solomon, Shottenfeld, and Brown. Re. 28,347.

Castillo, Herman B., to Eaton Corp. Liquid vapor cycle air-condition system. Re. 28,343, 2–25–75, Cl. 165—19.

Eaton Corp.: *See*—
Castillo, Herman B. Re. 28,343.

Eklund, Harry N., to Lear Siegler, Inc. Method of damping devices having oscillatory motion. Re. 28,349, 2–25–75, Cl. 33—344.

Golde, H. T., G.m.b.H.: *See*—
Kouth, Herbert, and Schlapp. Re. 28,346.

Intermenua (Proprietary) Ltd.: *See*—
Breetvelt, Emile. Re. 28,345.

Kouth, Herbert, and A. Schlapp, to H. T. Golde G.m.b.H. Sliding cover for roof opening in a motor vehicle. Re. 28,346, 2–25–75, Cl. 246—137.

Lear Siegler, Inc.: *See*—
Eklund, Harry N. Re. 28,349.

Lindly & Co., Inc.: *See*—
Abilock, Solomon, Shottenfeld, and Brown. Re. 28,347.

Monaco, Anthony T., to Motorola, Inc. Slide assembly. Re. 28,344, 2–25–75, Cl. 308—3.6.

Motorola, Inc.: *See*—
Monaco, Anthony T. Re. 28,344.

Norton Co.: *See*—
Washburn, Malcolm E. Re. 28,348.

Schlapp, Albert: *See*—
Kouth, Herbert, and Schlapp. Re. 28 346.

Shottenfeld, Richard: *See*—
Abilock, Solomon, Shottenfeld, and Brown. Re. 28,347.

Washburn, Malcolm E., to Norton Co. Process for producing silicon oxynitride. Re. 28,348, 2–25–75, Cl. 423—325.

LIST OF DESIGN PATENTEES

Adrema Pitney Bowes GmbH: *See*—
Schmeck, Robert E. 234,409.

Ajay Enterprises Corp.: *See*—
Berger, Samuel H. 234,381.

Barris, George, to Zee Toys, Inc. Toy model car. 234,407, 2–25–75, Cl. D34—15.

Berger, Samuel H., to Ajay Enterprises Corp. Rack for Billiard cues. 234,381, 2–25–75, Cl. D6—27.

Catelli, Pietro. Baby seat. 234,379, 2–25–75, Cl. D6—7.

Colgate-Palmolive Co.: *See*—
Douglas, Livingston C. 234,395.

Cox, Burton K.: *See*—
Merrill, Kenneth E., and Cox. 234,404.

Curtis Products Ltd.: *See*—
Tacke, William H. 234,382.
Tacke, William H. 234,383.
Tacke, William H. 234,384.

Douglas, Livingston C., to Colgate-Palmolvie Co. Bottle or similar article. 234,395, 2–25–75, Cl. D9—125.

Emerson Electric Co.:—*See*—
Ogurchak, Robert A. 234,402.

Erickson, Ronald E., to Sybron Corp. Hobby kiln. 234,403, 2–25–75, Cl. D23—82.

Eriksen, Willy M. Kayak. 234,397, 2–25–75, Cl. D12—63.

Gould, Jerome, to Stroh Brewery Co. Bottle. 234,393, 2–25–75, Cl. D9—100.

Griss, Eugene F. Gas leak detector. 234,398, 2–25–75, Cl. D23—1.

Hewson, C. Bruce, to York Lambton Corp. Ltd. Canister for carpet shampoo machine. 234,391, 2–25–75, Cl. D7—166.

Hockenberry, Jack: *See*—
Hodges, Ronald R., and Hockenberry. 234,386.
Hodges, Ronald R., and Hockenberry. 234,387.
Hodges, Ronald R., and Hockenberry. 234,388.

Hodges, Ronald R., to Steelcase Inc. Filing unit. 234,389, 2–25–75, Cl. D6—164.

Hodges, Ronald R., to Steelcase Inc. Work station. 234,390, 2–25–75, Cl. D6—167.

Hodges, Ronald R., and J. Hockenberry, to Steelcase Inc. Storage unit. 234,386, 2–25–75, Cl. D6—159.

Hodges, Ronald R., and J. Hockenberry, to Steelcase Inc. Desk. 234,387, 2–25–75, Cl. D6—161.

Hodges, Ronald R., and J. Hockenberry, to Steelcase Inc. Credenza. 234,388, 2–25–75, Cl. D6—164.

Hoshino, Kunio, to Matsushita Electric Industrial Co., Ltd. Amplifier. 234,406, 2–25–75, Cl. D26—14.

Kachergis, Henry J. Ball cock valve body. 234,400, 2–25–75, Cl. D23—19.

Kachergis, Henry J. Ball cock valve body. 234,401, 2–25–75, Cl. D23—19.

Kawano, Takeyoshi, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 234,408, 2–25–75, Cl. D56—4.

Killy, Earl J., to Olinkraft, Inc. Carton blank. 234,396, 2–25–75, Cl. D9—245.

Ludlow Corp.: *See*—
Turner, Raymond R. 234,385.

Magnavox Co., The: *See*—
McMahon, Gary L., and Van Dyke. 234,405.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hoshino, Kunio. 234,406.
Kawano, Takeyoshi. 234,408.

McMahon, Gary L., and J. B. Van Dyke, to The Magnavox Co. Control console for a television electronic game. 234,405. 2–25–75, Cl. D26—14.

Merrill, Kenneth E., and B. K. Cox. Dental tray. 234,404, 2–25–75, Cl. D24—1.

Metzger, P. Bottle or similar article. 234,394, 2–25–75, Cl. D9—115.

Ogurchak, Robert A., to Emerson Electric Co. Manifold for a heat transfer system. 234,402, 2–25–75, Cl. D23—43.

Olinkraft, Inc.: *See*—
Killy, Earl J. 234,396.

Rosenblum, Julia R. Luggage bag. 234,410, 2–25–75, Cl. D87—5.

S.A. Leda-France: *See*—
Verlet, Bruno. 234,380.

Schmeck, Robert E., to Adrema Pitney Bowes GmbH. Electric printing machine or similar article. 234,409, 2–25–75, Cl. D64—11.

Steelcase Inc.: *See*—
Hodges, Ronald R. 234,389.
Hodges, Ronald R. 234,390.
Hodges, Ronald R., and Hockenberry. 234,386.
Hodges, Ronald R., and Hockenberry. 234,387.
Hodges, Ronald R., and Hockenberry. 234,388.

Stroh Brewery Co.: *See*—
Gould, Jerome. 234,393.

Sybron Corp.: *See*—
Erickson, Ronald E. 234,403.

Tacke, William H., to Curtis Products Ltd. Secretarial chair. 234,382. 2–25–75, Cl. D6—30.

Tacke, William H., to Curtis Products Ltd. Chair. 234,383, 2–25–75, Cl. D6—31.

Tacke, William H., to Curtis Products Ltd. Chair. 234,384, 2–25–75, Cl. D6—31.

Taylor, Julian S. Restrictor valve. 234,399, 2–25–75, Cl. D23—19.

Turner, Raymond R., to Ludlow Corp. Bed. 234,385, 2–25–75, Cl. D6—80.

Van Dyke, John B.: *See*—
McMahon, Gary L., and Van Dyke. 234,405.

Verlet, Bruno, to S.A. Leda-France. Crib. 234,380, 2–25–75, Cl. D6—14.

Yamamoto Byora Co., Ltd.: *See*—
Yamamoto, Keiichi, and K. 234,392.

Yamamoto, Keiichi, and K., to Yamamoto Byora Co., Ltd. Self-tapping screw. 234,392, 2–25–75, Cl. D8—267.

Yamamoto, Kozo: *See*—
Yamamoto, Keiichi, and K. 234,392.

York Lambton Corp. Ltd.: *See*—
Hewson, C. Bruce. 234,391.

Zee Toys, Inc.: *See*—
Barris, George. 234,407.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 25, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 3,867,726
167 3,867,727

CLASS 3
1 3,867,728

CLASS 4
131 3,867,729

CLASS 5
37C 3,867,730
348WB 3,867,731
349 3,867,732

CLASS 7
8.1R 3,867,733

CLASS 8
2.5 3,868,214
149.3 3,868,215
182 3,868,216

CLASS 9
309 3,867,734

CLASS 13
13 3,868,473

CLASS 15
21D 3,867,735
250.32 3,867,736
250.42 3,867,737

CLASS 16
114 3,867,738
190 3,867,739

CLASS 17
72 3,867,740

CLASS 19
106R 3,867,741

CLASS 21
2.7A 3,868,217

CLASS 23
230EP 3,868,222
230B 3,868,219
3,868,220
230R 3,868,218
3,868,221
253R 3,868,223
259 3,868,224
281 3,868,225
284 3,868,226
301SP 3,868,228
313 3,868,227

CLASS 24
73 3,867,742
153BP 3,867,743

CLASS 26
54 3,867,744

CLASS 28
72SP 3,867,746
72.5 3,867,745

CLASS 29
76A 3,867,747
115 3,867,748
121R 3,867,749
148.3 3,867,750
148.4R 3,867,751
195 3,868,229
198 3,868,230
202R 3,867,752
203DS 3,867,754
203H 3,867,753
408 3,867,755
568 3,867,756
574 3,867,757
605 3,867,758
628 3,867,759
3,867,760

CLASS 33
41F 3,867,761
77 3,867,762
185R 3,867,763
241 3,867,764
344 Re.28,349

CLASS 34
13.8 3,867,765
95 3,867,766
155 3,867,767
242 3,867,768

CLASS 35
13 3,867,769
35R 3,867,770

CLASS 36
11.5 3,867,771

CLASS 37
43R 3,867,773
195 3,867,772

CLASS 40
125H 3,867,775
155 3,867,774
209 3,867,776
301 3,867,777

CLASS 42
79 3,867,778

CLASS 43
15 3,867,779
42.09 3,867,781
42.5 3,867,780
44.91 3,867,783
105 3,867,782

CLASS 44
62 3,868,231

CLASS 46
25 3,867,784
100 3,867,787
117 3,867,785
236 3,867,786

CLASS 47
35 3,867,788
41.12 3,867,789

CLASS 49
381 3,867,790

CLASS 51
9R 3,867,791
33W 3,867,792
97R 3,867,793
165.77 3,867,794
176 3,867,796
209R 3,867,795
216A 3,867,797
284 3,867,798
298 3,868,232
3,868,233
309 3,868,234
3,868,235

CLASS 52
235 3,867,799
347 3,867,800
475 3,867,801
483 3,867,802
693 3,867,803
699 3,867,804
744 3,867,805

CLASS 53
27 3,867,806
48 3,867,807

CLASS 55
203 3,868,236
270 3,868,237
273 3,868,238
389 3,868,239

CLASS 56
14.1 3,867,808

CLASS 57
58.52 3,867,809
142 3,867,810

CLASS 60
39.03 3,867,811
39.15 3,867,812
225 3,867,813
413 3,867,814
682 3,867,815
3,867,816

CLASS 61
1F 3,867,817

CLASS 62
52 3,867,818
293 3,867,819

CLASS 65
127 3,868,240
134 3,868,241
360 3,868,242

CLASS 66
154A 3,867,820

CLASS 68
184 3,867,821

CLASS 70
164 3,867,822
456B 3,867,823

CLASS 71
41 3,868,243
76 3,868,244
91 3,868,245

CLASS 72
118 3,867,824
161 3,867,825
205 3,867,826
251 3,867,827
263 3,867,828
321 3,867,829
361 3,867,830
367 3,867,831
399 3,867,832
407 3,867,833
456 3,867,834

CLASS 73
1D 3,867,835
67.5R 3,867,836
73 3,867,837
133R 3,867,838
194B 3,867,839
229 3,867,840
432A 3,867,841
480 3,867,842
490 3,867,843
517R 3,867,844

CLASS 74
25 3,867,845
41 3,867,846
55 3,867,847
70 3,867,848
109 3,867,849
142 3,867,850
244 3,867,851
446 3,867,852

CLASS 75
3 3,868,246
60 3,868,247
76 3,868,248
134N 3,868,249
147 3,868,250

CLASS 76
36 3,867,853

CLASS 81
3.2 3,867,854
63.1 3,867,855

CLASS 82
31 3,867,856

CLASS 83
9 3,867,857
113 3,867,858
157 Re.28,345
284 3,867,859
368 3,867,860
571 3,867,861

CLASS 84
1.19 3,867,862
420 3,867,863
473 3,867,866

CLASS 85
21 3,867,864
62 3,867,865

CLASS 86
20C 3,867,867

CLASS 90
11C 3,867,869
20 3,867,868

CLASS 91
372 3,867,870

CLASS 92
258 3,867,871

CLASS 93
1.1 3,867,872
33H 3,867,873
36M 3,867,875
61R 3,867,874
93DP 3,867,876

CLASS 96
1.5 3,868,251
3 3,868,252
53 3,868,253
75 3,868,254
91R 3,868,255
100 3,868,256
111 3,868,257

CLASS 99
402 3,867,877

CLASS 100
2 3,867,878
162 3,867,879
226 3,867,880

CLASS 101
7 3,867,881
35 3,867,882
125 3,867,883

CLASS 102
27R 3,867,884
28R 3,867,885

CLASS 104
148SS 3,867,886

CLASS 105
366B 3,868,083

CLASS 106
15FP 3,868,258
35 3,868,259
3,868,260
59 3,868,261
281R 3,868,262
281 3,868,263

CLASS 108
55 3,867,887

CLASS 112
80 3,867,888
121.11 3,867,889
139 3,867,890
166 3,867,891
252 3,867,892

CLASS 114
20R 3,867,893
102 3,867,894
109 3,867,895
3,867,896
167 3,867,897

CLASS 116
28R 3,867,898

CLASS 117
10 3,868,264
18 3,868,265
3,868,266
22 3,868,267
104R 3,868,268
136 3,868,269
139.5CQ 3,868,270

CLASS 118
6 3,867,899
33 3,867,900
50 3,867,901
423 3,867,902

CLASS 119
17 3,867,903
51R 3,867,904
109 3,867,905
158 3,867,906

CLASS 122
32 3,867,908
34 3,867,907
235B 3,867,909

CLASS 123
8.13 3,867,910
8.15 3,867,911
8.41 3,867,912
32EA 3,867,913
75B 3,867,914
3,867,915
117R 3,867,916
119R 3,867,917
139E 3,867,918
198D 3,867,919

CLASS 124
24R 3,867,920
26 3,867,921

CLASS 126
274 3,867,922

CLASS 128
2F 3,867,923
3,867,924
2.05M 3,867,926
2.05S 3,867,925
15 3,867,927
24.1 3,867,928
66 3,867,929
83 3,867,930
91A 3,867,931
92E 3,867,932
129 3,867,933
145.8 3,867,934
156 3,867,935
188 3,867,936
221 3,867,937
225 3,867,938
254 3,867,939
287 3,867,940
303 3,867,941
305 3,867,942
3,867,943
325 3,867,944
349R 3,867,945
351 3,867,946
361 3,867,947
395 3,867,948
419P 3,867,949
3,867,950

CLASS 131
2 3,867,951
262B 3,867,952

CLASS 132
39 3,867,953

CLASS 134
1 3,868,271
26 3,868,272

CLASS 136
83R 3,868,273

CLASS 137
1 3,867,954
179 3,867,955
269 3,867,956
360 3,867,957
375 3,867,958
602 3,867,959
625.29 3,867,961
625.6 3,867,960
635 3,867,962

CLASS 138
46 3,867,963
89 3,867,964

CLASS 139
33 3,867,965
55 3,867,966
424 3,867,967

CLASS 140
93D 3,867,968

CLASS 141
59 3,867,969
67 3,867,970

CLASS 148
1.5 3,868,274
6.15R 3,868,276
6.3 3,868,275
12.1 3,868,277
31.55 3,868,278
113 3,868,280
160 3,868,279
190 3,868,281

CLASS 149
98 3,868,282

CLASS 150
28R 3,867,971

CLASS 151
15 3,867,972

CLASS 152
153 3,867,973
213R 3,867,974

CLASS 156
58 3,868,283
96 3,868,284
147 3,868,285
163 3,868,286
201 3,868,287
248 3,868,288
443 3,868,289
510 3,868,290
515 3,868,291
568 3,868,292

CLASS 157
1.2 3,867,975

CLASS 161
1 3,868,293
4 3,868,294
15 3,868,295
43 3,868,296
68 3,868,297
161 3,868,298
162 3,868,299

CLASS 162
124 3,868,300
358 3,868,301

CLASS 164
52 3,867,976
72 3,867,977
82 3,867,978

CLASS 165
19 Re.28,343
29 3,867,979
54 3,867,980
55 3,867,981
107 3,867,982

CLASS 166
117.5 3,867,983
188 3,867,984
224A 3,867,985
276 3,867,986

CLASS 172
40 3,867,987

CLASS 173
48 3,867,988
147 3,867,989

CLASS 174
38 3,868,474
87 3,868,475

CLASS 176
3,868,302

CLASS 177
137 3,867,990

CLASS 178
6 3,868,476
3,868,477
6.8 3,868,478

CLASS 179
5R 3,868,479
8A 3,868,480
15BV 3,868,481
18FF 3,868,482
146R 3,868,483
170J 3,868,484

CLASS 180
5R 3,867,991
14B 3,867,992
19R 3,867,993
118 3,867,994

CLASS 181
33G 3,867,995
148 3,867,996

CLASS 182
113 3,867,997
221 3,867,998

CLASS 184
1.5 3,867,999

CLASS 187
52 3,868,000

CLASS 188
73.1 3,868,002
345 3,868,001

CLASS 192
4B 3,868,003
67A 3,868,004

105CS 3,868,005
111A 3,868,006
125B 3,868,007

CLASS 195

2 3,868,303
31F 3,868,304
49 3,868,305
51R 3,868,306
82 3,868,307

CLASS 197

127P 3,868,008

CLASS 198

25 3,868,009
179 3,868,010
195 3,868,011
276 3,868,012
287 3,868,013

CLASS 200

61.2 3,868,485
159R 3,868,486

CLASS 202

174 3,868,308
262 3,868,309

CLASS 203

58 3,868,310

CLASS 204

33 3,868,311
109 3,868,312
196 3,868,313
296 3,868,314

CLASS 206

45.19 3,868,014
229 3,868,015
350 3,868,016
491 3,868,017

CLASS 208

6 3,868,315
119 3,868,316
139 3,868,317

CLASS 209

9 3,868,318

CLASS 210

40 3,868,319
53 3,868,320
86 3,868,321
108 3,868,322
154 3,868,323
158 3,868,324
232 3,868,325
377 3,868,326
457 3,868,327
522 3,868,335

CLASS 211

40 3,868,018
126 3,868,019
3,868,020
184 3,868,021

CLASS 212

8R 3,868,022
46R 3,868,023

CLASS 214

1QC 3,868,024
1R 3,868,025
10.5D 3,868,026
16.1B 3,868,027
17C 3,868,028
77R 3,868,029
84 3,868,030
152 3,868,031
522 3,868,032
707 3,868,033
730 3,868,034
762 3,868,035

CLASS 215

12 3,868,036
216 3,868,037
305 3,868,038
309 3,868,039

CLASS 219

73 3,868,487
85 3,868,488
86 3,868,489
121L 3,868,490
146 3,868,491
203 3,868,492
318 3,868,493
341 3,868,494
368 3,868,495

CLASS 220

18 3,868,040
63R 3,868,042
90.4 3,868,043
324 3,868,041

CLASS 221

6 3,868,044
194 3,868,045

CLASS 222

146HE 3,868,046
166 3,868,047
380 3,868,048
400.7 3,868,049
509 3,868,050
571 3,868,051

CLASS 225

106 3,868,052

CLASS 226

173 3,868,053

CLASS 229

2.5 3,868,054
15 3,868,055
55 3,868,056

CLASS 235

61.7B 3,868,057
92PE 3,868,496
150.27 3,868,497
151.3 3,868,498
151.35 3,868,499

CLASS 236

13 3,868,058
15E 3,868,059

CLASS 237

12.3B 3,868,060

CLASS 239

571 3,868,061

CLASS 240

7.1LJ 3,868,500
10.1 3,868,501
44.1 3,868,502

CLASS 241

36 3,868,062
101.7 3,868,063
186.4 3,868,064

CLASS 242

55 3,868,065
56A 3,868,066
68.2 3,868,067
107.4 3,868,068
128 3,868,069
129 3,868,070

CLASS 243

31 3,868,071

CLASS 244

1SS 3,868,072
34A 3,868,073
77R 3,868,074

CLASS 246

34CT 3,868,075

CLASS 248

16 3,868,076
27 3,868,077
171 3,868,078
188.4 3,868,079
205R 3,868,080
245 3,868,081
358R 3,868,082
418 3,868,084
452 3,868,085
467 3,868,086

CLASS 249

137 3,868,087

CLASS 250

213VT 3,868,504
213R 3,868,503
269 3,868,505
278 3,868,506
287 3,868,507
330 3,868,508
336 3,868,509
366 3,868,510
376 3,868,511
483 3,868,512
504 3,868,513
562 Re.28,347
566 3,868,514

CLASS 252

8.55C 3,868,328
17 3,868,329
33.6 3,868,330
373 3,868,331
452 3,868,332
463 3,868,333
520 3,868,334
527 3,868,336

CLASS 254

49 3,868,088
134.3PA 3,868,089
134.3R 3,868,090
164 3,868,091

CLASS 259

120 3,868,092
191 3,868,093

CLASS 260

2.5R 3,868,337
15 3,868,338
17R 3,868,339
17.4ST 3,868,340
23XA 3,868,341
29.2M 3,868,342
29.4R 3,868,343
33.6AQ 3,868,344
37SB 3,868,345
3,868,346
42.15 3,868,347
47CP 3,868,348
67.7 3,868,349
77.5Q 3,868,350
78UA 3,868,351
3,868,353
78R 3,868,352
94.7H 3,868,354
112G 3,868,355
112.7 3,868,356
3,868,357
3,868,358
173 3,868,359
210AB 3,868,360
211.5R 3,868,361
239BD 3,868,363
239.1 3,868,364
3,868,365
239.3T 3,868,362
239.55R 3,868,366
243C 3,868,367
3,868,369
243R 3,868,367
249.5 3,868,371
251A 3,868,372
256.4E 3,868,373
256.4F 3,868,374
268BZ 3,868,377
268K 3,868,376
268R 3,868,375
289R 3,868,378
294.8C 3,868,379
295AM 3,868,380
3,868,381
306.7T 3,868,382
307B 3,868,383
307F 3,868,384
309 3,868,385
309.6 3,868,386
315 3,868,387
326N 3,868,388
3,868,389
326.1 3,868,390
326.41 3,868,391
340.3 3,868,392
343.6 3,868,370
346.4 3,868,393
346.6 3,868,397
346.8R 3,868,394
369 3,868,395
397.2 3,868,396
438.1 3,868,398
453AR 3,868,399
464 3,868,400
468H 3,868,401
468K 3,868,402
471C 3,868,404
471R 3,868,403
473F 3,868,405
473R 3,868,406
482R 3,868,407
485F 3,868,408
486R 3,868,409
3,868,410
514D 3,868,412
3,868,413
514L 3,868,411
515A 3,868,414
3,868,415
518R 3,868,416
526N 3,868,417
558S 3,868,418
564R 3,868,419
578 3,868,420
599 3,868,421
604HF 3,868,422
619A 3,868,423
621 3,868,424
652.5P 3,868,425
3,868,426
668C 3,868,427
669R 3,868,428
674SA 3,868,429
674A 3,868,430
859R 3,868,431
874 3,868,432
876R 3,868,433
880R 3,868,434

CLASS 264

1 3,868,435
40 3,868,436
92 3,868,437
156 3,868,438

CLASS 266

5T 3,868,094
23K 3,868,095
35 3,868,096

CLASS 267

124 3,868,097
138 3,868,098
161 3,868,099
162 3,868,100

CLASS 269

25 3,868,101
26 3,868,102
325 3,868,103

CLASS 272

18 3,868,107

CLASS 273

1.5A 3,868,108
75 3,868,110
87C 3,868,111
94R 3,868,112
101 3,868,113
106.5B 3,868,114
146 3,868,115
186C 3,868,116
187A 3,868,109

CLASS 274

47 3,868,117

CLASS 277

30 3,868,104
134 3,868,105
237R 3,868,106

CLASS 279

1M 3,868,118
16 3,868,119
123 3,868,120

CLASS 280

11.2 3,868,121
11.37B 3,868,122
79.2 3,868,123
106.5R 3,868,129
150AB 3,868,124
3,868,125
3,868,126
434 3,868,127
453 3,868,128

CLASS 285

243 3,868,130
286 3,868,131
312 3,868,132

CLASS 289

2 3,868,133

CLASS 292

28 3,868,134

CLASS 294

1R 3,868,135
19R 3,868,136
74 3,868,137
3,868,138
81SF 3,868,139
87.2 3,868,140

CLASS 296

28R 3,868,141
98 3,868,142
137F Re.28,346

CLASS 297

216 3,868,143
304 3,868,144

CLASS 299

37 3,868,145
39 3,868,146

CLASS 301

37C 3,868,147

CLASS 302

2R 3,868,148
60 3,868,149

CLASS 303

20 3,868,150

CLASS 307

212 3,868,515
221R 3,868,516
235R 3,868,517
268 3,868,518
270 3,868,519

CLASS 308

3.6 Re.28,344
207 3,868,151

CLASS 310

61 3,868,520
257 3,868,521

CLASS 312

214 3,868,152
236 3,868,153
238 3,868,156
250 3,868,154
284 3,868,155
305 3,868,157
350 3,868,158

CLASS 313

62 3,868,522
94 3,868,523
3,868,524
141 3,868,530
184 3,868,525
188 3,868,526
3,868,527
220 3,868,528
222 3,868,529
318 3,868,531
407 3,868,532
468 3,868,533
483 3,868,534
519 3,868,535

CLASS 315

12 3,868,536
39.3 3,868,539
73 3,868,540
94 3,868,541
169TV 3,868,542
3,868,543
200A 3,868,544
209 3,868,545
293 3,868,546
296 3,868,547
389 3,868,537
411 3,868,538

CLASS 316

1 3,868,159

CLASS 317

5 3,868,548
11B 3,868,550
11E 3,868,549
23 3,868,551
40A 3,868,552
262F 3,868,553

CLASS 318

434 3,868,554
577 3,868,555
676 3,868,556
685 3,868,557

CLASS 320

12 3,868,558
61 3,868,559

CLASS 321

2 3,868,560
10 3,868,561
13 3,868,562

CLASS 322

28 3,868,563
59 3,868,564

CLASS 324

34R 3,868,565
51 3,868,566
77CS 3,868,568
77A 3,868,567
126 3,868,569
166 3,868,570

CLASS 325

15 3,868,571
16 3,868,572
3,868,573
38B 3,868,574
51 3,868,575
65 3,868,576
476 3,868,577

CLASS 328

127 3,868,578

CLASS 329

107 3,868,579

CLASS 330

18 3,868,580
19 3,868,581
22 3,868,582
30D 3,868,583
3,868,586
38M 3,868,587
124R 3,868,584
3,868,585
130 3,868,598

CLASS 331

77 3,868,588
94.5C 3,868,590
3,868,592
94.5D 3,868,593
94.5P 3,868,591
94.5 3,868,589
99 3,868,594
108A 3,868,595
108R 3,868,596
116R 3,868,597

CLASS 332

17 3,868,599
31R 3,868,600
45 3,868,601

CLASS 333

17 3,868,602
18 3,868,603
28R 3,868,604
72 3,868,608
76 3,868,605
80T 3,868,606
98S 3,868,607

CLASS 334

11 3,868,609

CLASS 335

112 3,868,610
196 3,868,611

CLASS 336

197 3,868,612
206 3,868,613

CLASS 337

66 3,868,614
169 3,868,615
201 3,868,616
203 3,868,617
206 3,868,618
295 3,868,619

CLASS 338

28 3,868,620
180 3,868,621

CLASS 339

12R 3,868,160
14R 3,868,161
17M 3,868,162
19 3,868,163
59R 3,868,164
97R 3,868,165
176MP 3,868,166

CLASS 340

3R 3,868,622
7PC 3,868,623
8R 3,868,624
27SS 3,868,625
38L 3,868,626
52E 3,868,627
80 3,868,628
104 3,868,629
119 3,868,630
146.1AG 3,868,631
146.1AL 3,868,632
146.1BA 3,868,633
146.3MA 3,868,635
146.3D 3,868,634
146.3F 3,868,637
146.3J 3,868,636
147R 3,868,638
148 3,868,639
151 3,868,640
163 3,868,641
172.5 3,868,642
3,868,643
3,868,644
3,868,645
3,868,646
3,868,647
3,868,648
3,868,649
173AM 3,868,655
173CA 3,868,654
173DR 3,868,656
173LM 3,868,652
173LS 3,868,651
3,868,653
173LT 3,868,658
173R 3,868,650
3,868,657
174TF 3,868,659
3,868,660
3,868,661
213R 3,868,662
237S 3,868,663
244E 3,868,664
255 3,868,665
259 3,868,666
272 3,868,667
279 3,868,668
280 3,868,669
286 3,868,670
323 3,868,671
324AD 3,868,672
3,868,673
324M 3,868,674
334 3,868,675
336 3,868,676
347AD 3,868,677
3,868,678
3,868,679
347SY 3,868,680
365 3,868,681
366R 3,868,682
384E 3,868,684
384R 3,868,683

CLASS 343

5DP 3,868,685
7A 3,868,686
13R 3,868,687
16M 3,868,688
101 3,868,689
103 3,868,690
3,868,691
112D 3,868,692
708 3,868,693
753 3,868,694
778 3,868,695

CLASS 346

17 3,868,696
68 3,868,697
75 3,868,698

CLASS 350

7 3,868,167

12	3,868,168
26	3,868,169
85	3,868,171
96WG	3,868,170
150	3,868,172
215	3,868,173
216	3,868,174
225	3,868,175
289	3,868,176
301	3,868,177
CLASS 353	
19	3,868,178
27	3,868,179
95	3,868,180
CLASS 354	
12	3,868,699
23	3,868,700
33	3,868,701
42	3,868,702
49	3,868,703
50	3,868,704
51	3,868,705
95	3,868,706
202	3,868,707
206	3,868,708
212	3,868,709
213	3,868,710
219	3,868,711
230	3,868,712
231	3,868,713
289	3,868,714
298	3,868,715
317	3,868,716
340	3,868,717
CLASS 355	
15	3,868,181
67	3,868,182
68	3,868,183
CLASS 356	
103	3,868,184
106R	3,868,185
207	3,868,186
CLASS 357	
22	3,868,718
23	3,868,187
26	3,868,719
34	3,868,720
41	3,868,721
44	3,868,722
54	3,868,723
65	3,868,724
68	3,868,725
CLASS 401	
190	3,868,188
CLASS 403	
12	3,868,189
189	3,868,190
216	3,868,191
263	3,868,192
344	3,868,193
CLASS 404	
126	3,868,194
CLASS 408	
61	3,868,195
CLASS 415	
146	3,868,196
199R	3,868,197
CLASS 417	
53	3,868,198
CLASS 423	
41	3,868,439
	3,868,440
69	3,868,441
121	3,868,442
325	Re.28,348
392	3,868,443
422	3,868,444
CLASS 424	
14	3,868,445
81	3,868,446
	3,868,447
94	3,868,448
115	3,868,450
180	3,868,451
217	3,868,449
238	3,868,452
243	3,868,453
248	3,868,454
253	3,868,455
273	3,868,456
	3,868,457
	3,868,458
276	3,868,459
304	3,868,460
311	3,868,461
326	3,868,462
330	3,868,463
CLASS 425	
10	3,868,199
64	3,868,200
78	3,868,201
242B	3,868,202
242	3,868,203
338	3,868,204
363	3,868,205
387B	3,868,206
404	3,868,207
467	3,868,208
504	3,868,209
CLASS 426	
48	3,868,464
168	3,868,465
199	3,868,466
208	3,868,467
243	3,868,468
262	3,868,469
302	3,868,470
303	3,868,471
342	3,868,472
CLASS 431	
4	3,868,210
10	3,868,211
171	3,868,212
CLASS 432	
134	3,868,213

CLASSIFICATION OF DESIGNS

D6—	7	234,379
	14	234,380
	27	234,381
	30	234,382
	31	234,383
		234,384
	80	234,385
	159	234,386
	161	234,387
	164	234,388
		234,389
	167	234,390
D7—	166	234,391
D8—	267	234,392
D9—	100	234,393
	115	234,394
	125	234,395
	245	234,396
D12—	63	234,397
D23—	1	234,398
	19	234,399
		234,400
		234,401
	43	234,402
	82	234,403
D24—	1R	234,404
D26—	14E	234,405
	L	234,406
D34—	15AN	234,407
D56—	4B	234,408
D64—	11R	234,409
D87—	5G	234,410

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,867,727
2 : Re.28,343
4 : 3,867,931
3,867,977
3,868,517
3,868,657
3,868,692
3,868,720
3,868,721
5 : 3,868,026
6 : Re.28,349
3,867,728
3,867,731
3,867,753
3,867,761
3,867,765
3,867,769
3,867,770
3,867,775
3,867,782
3,867,785
3,867,788
3,867,797
3,867,814
3,867,893
3,867,905
3,867,912
3,867,926
3,867,932
3,867,933
3,867,934
3,867,944
3,867,946
3,867,954
3,867,967
3,867,995
3,868,024
3,868,030
3,868,033
3,868,037
3,868,047
3,868,049
3,868,054
3,868,085
3,868,089
3,868,109
3,868,110
3,868,139
3,868,157
3,868,163
3,868,180
3,868,186
3,868,194
3,868,249
3,868,261
3,868,279
3,868,297
3,868,326
3,868,329
3,868,334
3,868,361
3,868,376
3,868,386
3,868,406
3,868,449
3,868,466
3,868,477
3,868,497
3,868,503
3,868,536
3,868,550
3,868,552
3,868,572
3,868,579
3,868,583
3,868,589
3,868,592
3,868,596
3,868,601
3,868,602
3,868,607
3,868,623
3,868,624
3,868,626
3,868,630
3,868,633
3,868,653
3,868,670
3,868,675
3,868,684
3,868,685
3,868,686
3,868,688
3,868,693
3,868,697
3,868,699
3,868,706
3,868,707
3,868,724
8 : 3,867,738
3,867,780
3,867,803
3,867,855
3,867,883
3,867,903
3,868,018
3,868,045
3,868,083
3,868,088
3,868,115
3,868,479
3,868,577
3,868,600
3,868,638
3,868,648
9 : 3,867,787
3,867,799
3,867,804
3,867,805
3,867,922
3,868,042
3,868,069
3,868,243
3,868,294
3,868,399
3,868,566
10 : 3,868,400
11 : 3,868,086
3,868,144
12 : 3,867,783
3,867,822
3,867,837
3,867,908
3,868,090
3,868,137
3,868,148
3,868,225
3,868,573
3,868,618
3,868,625
13 : 3,867,962
3,867,975
3,868,189
16 : 3,868,032
17 : Re.28,344
3,867,745
3,867,760
3,867,773
3,867,776
3,867,864
3,867,871
3,867,887
3,867,890
3,867,940
3,867,998
3,868,017
3,868,041
3,868,070
3,868,078
3,868,093
3,868,111
3,868,113
3,868,121
3,868,124
3,868,136
3,868,145
3,868,149
3,868,173
3,868,177
3,868,201
3,868,206
3,868,283
3,868,292
3,868,307
3,868,353
3,868,409
3,868,412
3,868,413
3,868,451
3,868,467
3,868,468
3,868,475
3,868,532
3,868,538
3,868,547
3,868,553
3,868,616
3,868,617
3,868,673
18 : 3,867,939
3,867,982
3,868,014
3,868,127
3,868,151
3,868,244
3,868,263
3,868,295
3,868,358
3,868,368
3,868,383
3,868,437
3,868,452
3,868,454
3,868,489
3,868,549
19 : 3,867,801
3,867,880
3,867,987
3,868,028
3,868,447
3,868,668
3,868,680
20 : 3,867,866
3,868,126
3,868,461
21 : 3,867,806
3,868,005
3,868,152
22 : 3,867,983
3,867,984
3,867,985
3,868,216
3,868,269
3,868,316
3,868,427
3,868,441
23 : 3,867,992
3,868,211
24 : 3,867,950
3,868,040
3,868,074
3,868,341
3,868,446
3,868,478
3,868,508
3,868,606
3,868,614
3,868,659
3,868,660
3,868,695
25 : Re.28,348
3,867,789
3,867,794
3,867,795
3,867,807
3,867,809
3,867,821
3,867,874
3,867,896
3,867,923
3,867,957
3,868,048
3,868,104
3,868,118
3,868,141
26 : 3,867,740
3,867,747
3,867,750
3,867,758
3,867,772
3,867,779
3,867,823
3,867,843
3,867,919
3,867,999
3,868,015
3,868,020
3,868,105
3,868,114
3,868,132
3,868,156
3,868,192
3,868,209
3,868,235
3,868,142
3,868,154
3,868,167
3,868,168
3,868,195
3,868,228
3,868,230
3,868,232
3,868,233
3,868,267
3,868,286
3,868,346
3,868,351
3,868,434
3,868,499
3,868,525
3,868,540
3,868,544
3,868,557
3,868,562
3,868,590
3,868,594
3,868,620
3,868,622
3,868,672
3,868,677
3,868,690
3,868,691
3,868,709
3,868,712
3,868,716
3,868,717
3,867,747
3,867,750
3,867,758
3,867,772
3,867,779
3,867,823
3,867,843
3,867,919
3,867,999
3,868,015
3,868,020
3,868,105
3,868,114
3,868,132
3,868,156
3,868,192
3,868,209
3,868,235

3,868,425
3,868,426
3,868,444
3,868,448
3,868,565
3,868,570
3,868,627
3,868,651
27 : 3,867,726
3,867,851
3,867,858
3,867,898
3,867,925
3,867,927
3,867,949
3,867,965
3,867,991
3,867,996
3,868,063
3,868,191
3,868,284
3,868,319
3,868,355
3,868,471
3,868,545
28 : 3,867,909
3,867,930
29 : 3,868,007
3,868,210
3,868,407
3,868,615
30 : 3,868,440
31 : 3,867,947
32 : 3,868,057
33 : 3,868,076
3,868,301
34 : 3,867,827
3,867,863
3,867,935
3,867,937
3,868,000
3,868,046
3,868,052
3,868,087
3,868,135
3,868,164
3,868,193
3,868,208
3,868,220
3,868,221
3,868,229
3,868,259
3,868,260
3,868,275
3,868,282
3,868,288
3,868,315
3,868,332
3,868,336

3,868,339
3,868,340
3,868,349
3,868,360
3,868,362
3,868,363
3,868,365
3,868,367
3,868,372
3,868,373
3,868,374
3,868,379
3,868,385
3,868,387
3,868,388
3,868,390
3,868,391
3,868,398
3,868,414
3,868,415
3,868,428
3,868,432
3,868,455
3,868,469
3,868,480
3,868,483
3,868,485
3,868,511
3,868,518
3,868,526
3,868,535
3,868,539
3,868,543
3,868,571
3,868,581
3,868,584
3,868,588
3,868,604
3,868,643
3,868,661
3,868,665
3,868,676
3,868,687
3,868,719
35 : 3,868,293
3,868,507
36 : Re.28,347
3,867,743
3,867,767
3,867,771
3,867,798
3,867,802
3,867,835
3,867,836
3,867,842
3,867,865
3,867,875
3,867,895

3,867,906
3,867,910
3,867,924
3,867,942
3,867,971
3,867,978
3,867,980
3,867,988
3,868,006
3,868,008
3,868,019
3,868,036
3,868,056
3,868,072
3,868,097
3,868,116
3,868,117
3,868,140
3,868,170
3,868,172
3,868,175
3,868,182
3,868,196
3,868,202
3,868,215
3,868,234
3,868,242
3,868,252
3,868,264
3,868,271
3,868,273
3,868,276
3,868,281
3,868,304
3,868,312
3,868,325
3,868,359
3,868,370
3,868,378
3,868,389
3,868,397
3,868,416
3,868,465
3,868,470
3,868,472
3,868,501
3,868,512
3,868,515
3,868,560
3,868,608
3,868,629
3,868,632
3,868,636
3,868,637
3,868,644
3,868,652
3,868,669
3,868,696

3,868,715
3,868,723
37 : 3,868,112
3,868,270
3,868,289
3,868,496
39 : 3,867,748
3,867,759
3,867,796
3,867,812
3,867,859
3,867,861
3,867,862
3,867,877
3,867,964
3,867,970
3,867,973
3,868,010
3,868,016
3,868,029
3,868,079
3,868,091
3,868,108
3,868,119
3,868,123
3,868,130
3,868,153
3,868,155
3,868,165
3,868,176
3,868,203
3,868,238
3,868,266
3,868,320
3,868,330
3,868,343
3,868,344
3,868,354
3,868,513
3,868,528
3,868,529
3,868,530
3,868,698
40 : 3,867,791
3,867,819
3,867,945
3,867,986
3,868,551
3,868,671
41 : 3,867,732
3,868,060
3,868,190
3,868,300
3,868,473
3,868,580
42 : 3,867,754
3,867,781
3,867,828

3,867,839
3,867,841
3,867,929
3,867,938
3,868,012
3,868,031
3,868,059
3,868,064
3,868,065
3,868,075
3,868,094
3,868,096
3,868,102
3,868,143
3,868,161
3,868,197
3,868,217
3,868,227
3,868,241
3,868,278
3,868,285
3,868,287
3,868,296
3,868,302
3,868,309
3,868,328
3,868,369
3,868,408
3,868,429
3,868,442
3,868,462
3,868,463
3,868,474
3,868,481
3,868,493
3,868,520
3,868,548
3,868,569
3,868,586
3,868,605
3,868,612
3,868,613
3,868,619
3,868,683
44 : 3,867,746
3,867,853
3,868,184
45 : 3,867,902
47 : 3,867,889
3,867,981
3,868,023
3,868,062
3,868,073
3,868,338
48 : 3,867,733
3,867,786
3,867,846
3,867,882

3,867,904
3,867,989
3,867,994
3,868,035
3,868,043
3,868,098
3,868,162
3,868,166
3,868,183
3,868,198
3,868,327
3,868,410
3,868,422
3,868,433
3,868,505
3,868,516
3,868,546
3,868,595
3,868,631
3,868,662
3,868,689
49 : 3,867,959
3,868,039
3,868,274
3,868,333
3,868,439
51 : 3,867,757
3,867,764
3,868,125
3,868,188
3,868,504
3,868,524
3,868,554
3,868,591
3,868,635
3,868,667
53 : 3,867,734
3,867,840
3,867,997
3,868,567
54 : 3,867,976
3,868,509
55 : 3,867,729
3,867,739
3,867,872
3,867,920
3,867,961
3,868,022
3,868,050
3,868,080
3,868,084
3,868,205
3,868,224
3,868,306
3,868,324
3,868,679
3,868,710
56 3,867,974

DESIGN PATENTS

6 : 234,393
234,407
9 : 234,400
234,401
234,409

17 : 234,381
234,396
18 : 234,405
20 : 234,404

25 : 234,387
26 : 234,382
234,383
234,384

234,386
234,388
234,389
234,390

34 : 234,395
36 : 234,410
39 : 234,398
40 : 234,399

42 : 234,402
47 : 234,385
53 : 234,397
55 : 234,403

U. S. GOVERNMENT PRINTING OFFICE : O - 1975

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT AND TRADEMARK OFFICE
C. Marshall Dann, *Commissioner*